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THE INTERNATIONAL EXHIBITION OF 1862

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A

CONCISE HISTORY

OF THE

INTERNATIONAL EXHIBITION

OF 1862

ITS RISE AND PROGRESS, ITS BUILDING AND FEATURES

AND A SUMMARY OF ALL FORMER EXHIBITIONS

BY

JOHN HOLLINGSHEAD.

WITH FORTY ILLUSTRATIONS.

LONDON

PRINTED FOR HER MAJESTY'S COMMISSIONERS.

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PREFACE.

As this Book has to deal with facts connected with Industrial Exhibitions, and not with phantoms of the imagination, a large portion of it is necessarily a compilation from official sources. The chapter containing an account of the Building is taken from a paper by Captain Phillpotts, R.E., but is here printed with many additions, corrections, and illustrations.

JOHN HOLLINGSHEAD.

London, April, 1862.

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THE DOME & NAVE OF THE INTERNATIONAL EXHIBITION OF 1862

THE TRANSEPT & NAVE OF THE GREAT EXHIBITION OF 1851

SCALE OF 50 FT. = 1 INCH

REFERENCES.

- a KING OF PRUSSIA'S PORCELAIN TROPHY.
- b MINTON'S MAJOLICA FOUNTAIN.
- c LADIES' RETIRING ROOMS.
- d GENTLEMEN'S RETIRING ROOMS.

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INTERNATIONAL EXHIBITIONS.

CHAPTER I.

INTRODUCTION.

WHEN the Great Exhibition of 1851 was first put in motion, its promoters knew little of the probable success of such a display—of the extent to which it would be supported by exhibitors or visited by the public. They could only be encouraged by the records of certain exhibitions which had been merely national in character and design. They were fed upon statistics, more or less reliable, which sometimes led them to hope, sometimes to despair. They had to overcome the apathy of many supporters, and to check the wild enthusiasm of others. Their administrative mechanism—with the exception of the Society of Arts—was all new, and it creaked and occasionally stuck fast, until all the parts settled down in their appointed places, and were smoothed by action and hard work. They had set themselves a difficult and novel task. They wished to attract exhibitors from the remotest corners of the earth, and to provide a palace for them—a temple dedicated to the worship of trade—without the aid of a government grant. They met with assistance where they least expected it, and opposition where they expected assistance. They had to feel their way, step by step; to send out travelling commissioners to solicit aid in the great centres of industry; to appoint committees and then teach them their duties; and to do thousands of things, unfortified by precedents and in doubt as to results. The world was all before them where to choose, and they confined themselves to no nation and to no class. Never was such a broad appeal made to the trading instincts of mankind. It seemed as if the country, conscious of its own strength, was anxious to enter into an industrial contest with the whole world. Wherever any handicraft was practised, any package shipped, any bill of exchange drawn, the challenge was sent. Some thought the appeal was too broad, and even dangerous. The doctrine of free markets, notwithstanding the recent partial abolition of the corn-tax, was not as popular then as it is now, and our tariff, instead of being pared down to thirty-five articles, including varieties,

was one of more than five hundred articles, excluding varieties. Those were the days when the Custom-house looked sharply after "*bond-fide* nutmegs," and sweet-meats played an important part in the national finance. Public opinion, in its surly moods, accused the Exhibition promoters of giving up their country into the hands of invited savages. The memorable May-day of 1851 was looked forward to with dread by many honest people, who regarded it as the turning-point in England's fate. They expected that London would be ravaged at will, and planted with many varieties of new disease. The tomahawk was looked for in Hyde Park, the stiletto in Cheapside, and dirt, strange costumes, and stranger manners everywhere. Unmanageable crowds were pictured assembling in the chief thoroughfares to make the Exhibition a stalking-horse for riot and plunder. Wild fears produced over-caution in the laying out of plans, and the police and army were concentrated as if for an internal war. When the statistics of 1851, however, came to be gathered together, it was found that there had been less crime, less disorder, and fewer accidents than the annual average.

The building of course was not free from panic-stricken criticism. Its lightness was regarded as an evident sign of weakness, and its size was held to increase the danger. Although its strength was tested in every mechanical way, a broad margin was left for doubts, and not one half of the numbers were at first carefully admitted who swarmed into it unchecked later in its brief life.

Like boys who have hesitated long on the bank of a clear stream, but who leaping in full of dread, are surprised to find how harmless and pleasant the water is, we can now afford to smile at our fears of twelve years ago. The Exhibition came and went. Strange nations were brought together, and learned to know each other better. Though all the good that was once expected from this gathering, in maintaining the peace of the world, cannot, with our painful after-knowledge, be claimed now, still we need not be ashamed of the Exhibition and its results. Unless friendly intercourse, hard work, and industrial rivalry are hollow mockeries, it is impossible that 1851 can have left no good mark upon the world.

ROYAL MEWS, CHARING CROSS, 1828.

CHAPTER II.

EARLY EXHIBITIONS.

INDUSTRIAL exhibitions, after a stormy existence of more than a century, have established a claim to the honours of history. In their early youth, in the dim old times, they may have been content with the pedler's pack, the travelling show-van, or a booth at a fair; but now they have grown rich and important, and have settled down into something like a permanent institution. At first, when they gave up their gipsy life, and started in regular business, they began as national, almost parochial, displays; and it was long before the growing free-trade spirit of the age allowed them to become international. Museums occasionally dabbled in the products of foreign industry, but with evident wonder and distrust. A catalogue of rarities exhibited at the Public Theatre of Leyden, in 1699, gives us a curious account of these early exhibitions. There was a Norway house, built of beams, without mortar or stone, side by side with a mermaid's hand, a crocodile, and several thunderbolts. There were a pair of Laplan's breeches and a pair of Polonian boots, mixed up with the chair of a midwife, and a model of a murdering knife found in England, "whereon was written, Kil the males, rost the females, and burn the whelps." There were a Roman lamp, "which burnes alwayes under ground," and a Persian tobacco-pipe, in companionship with the stomach of a man, and a mushroom said to be a hundred years old. Arabian jewels, East Indian coral trees, Egyptian linen, Chinese songs on Chinese paper, and a pot of China beer, had to be taken in connection with such delicacies as the snout of a sawfish, the skin of a woman, "prepared like leather," or the ears and tongue of a thief who had been hanged.

The Society of Arts may claim the credit of originating national exhibitions. The idea sprang naturally from the proceedings of a Society which was ostensibly founded to encourage arts, manufactures, and commerce. Amongst much that was weak, meddling, and even ridiculous, regarded by the light of our improved politico-economical knowledge, the Society succeeded in doing some good in its youth within the legitimate scope of its labours. In 1756—about the period when the Royal Academy first began its fine art exhibitions—it offered prizes for improvements in the manufacture of tapestry, carpets, porcelain, and other things, and exhibited the articles which were offered for competition. It also offered prizes for improvements in agricultural and other machines, and in 1761, a gentleman was paid to attend an exhibition of machinery in the Society's rooms, and to explain the models exhibited.

A few years after this, France came forward, most probably without any knowledge of the English exhibitions, and founded the first of that long and successful series of national expositions, which were only made international in France in 1855. The first French Exposition was opened in Paris, in 1797, by the Marquis d'Avèze, who originated the idea in the stormy days of the Directory, and lived to see it thriving under a Consul, an Emperor, and a King. The Exposition of 1798 remained open only three days, and the articles exhibited were of an aristocratic and costly, rather than of a popular character. The exhibitors numbered only one hundred and ten, and a jury of nine men was appointed to decide upon their merits. The second Exposition took place in 1801, when the exhibitors reached two hundred and twenty-nine. This display was considered so successful, and the preparation for it had been found so effective in keeping distressed work-people employed, that the third Exposition was fixed to take place in 1802, after the short period of one year. The exhibitors, notwithstanding this short breathing-time, had increased to five hundred and forty, and their productions showed an extraordinary improvement in every way. Mechanical science had made manufacture easier, and had reduced the price of all articles in popular demand.

The fourth French Exposition opened, after a longer interval, in 1806, supported by the largely increased number of one thousand four hundred and twenty-two exhibitors. The fifth Exposition took place in 1819, after an interval of thirteen years, and showed the moderately increased number of one thousand six hundred and sixty-two exhibitors. It displayed, however, a marked improvement in many branches of popular manufacture. The sixth Exposition, in 1823, showed a slight decrease in the exhibitors, who, from the former number, had fallen to one thousand six hundred and forty-eight. On the other hand, the jury rewards were increased from eight hundred and nine to one thousand and ninety-one.

The seventh Exposition, in 1827, had one thousand seven hundred and ninety-five exhibitors. Steam-power in manufacture now began to be felt; goods had improved; prices had diminished; and the foundation was laid of a large export trade. The eighth Exposition was held in 1834, when a steady progress was shown in every branch of industry, and the exhibitors had increased to two thousand four hundred and forty-seven. The ninth Exposition, in 1839, had three thousand two hundred and eighty-one exhibitors, and was remarkable for its display of raw produce and a purer taste in design. The tenth Exposition, in 1844, was

supported by three thousand nine hundred and sixty exhibitors, of whom no less than three thousand two hundred and fifty-three were honourably recognized by the jury. The eleventh Exposition, in 1849—the last of the purely national displays in France before our Great International Exhibition of 1851—was supported by four thousand four hundred and ninety-four exhibitors; and its great and predominating attraction was machinery.

The progress of like exhibitions in England during the early part of this period was not by any means so marked and steady. Such industrial displays had to fight their way against a vast amount of apathy and prejudice. The first project set on foot for commencing an annual public exhibition of this kind was coldly received, and even denounced by the mouthpieces of public opinion.

This exhibition, however, was formed in 1828, under the patronage of King George IV., on the plan which had been found successful in France, the Netherlands, and the United States, and the place fixed upon for the display was a royal stable. The King's Mews at Charing Cross, which was pulled down in 1833, and which stood on the site of Trafalgar Square, was fitted up to receive the few productions sent in for exhibition, and the Committee of management, consisting of the Hon. G. Agar Ellis as chairman, and a number of distinguished men, issued the following manifesto:—"It appears to the Committee that it has long been a desideratum among our most intelligent merchants and manufacturers, that an Annual Exhibition of specimens of new and improved productions of our artisans and manufacturers, conducted on a scale that should command the attention of the British public resident in and annually visiting the metropolis, would be highly conducive to the interests of the foreign commerce as well as the internal trade of the United Kingdom. In the opinion of the Committee such an exhibition will not only prove a powerful stimulus in promoting the farther improvement of our already successful manufacturers, but will also bring into notice the latent talents of many skilful artisans and small manufacturers now labouring in obscurity, and sacrificing inventions valuable alike to the country and to themselves, from wanting such an opportunity of introducing them to the British public."

Public opinion professed to wish well to any plan having the promotion of English arts and manufactures, and the encouragement of English inventive talent for its object, but it doubted whether the proposed exhibition was not extremely at variance with the established tastes and habits of British artisans and manufacturers. In a spirit of narrow national pride, it thought that exhibitions of the kind were only suited to countries where the arts were still in a state of infancy, and where they stood in need of every sort of adventitious aid; but that people like the British, who had eclipsed all other nations in the variety and excellence of their manufactures, could get on very well without such stimulating projects. The Boltons, the Wedgwoods, the Strutts, the Arkwrights, and the Bramahs of the time were almost exhorted not to support such a scheme, and no labour was spared to nip this, our first really national exhibition, in the bud.

The promoters of the exhibition, notwithstanding this opposition, worked very energetically in carrying out their plan. This Committee, or Board, as it was called, consisted of the Hon. G. Agar Ellis, M.P., before mentioned; Dr. Birkbeck; Mr. John Hales Calcraft; John Earl of Clare; Mr. Henry Drummond; Hugh Viscount Ebrington, M.P.; the Hon. G. M. Fortescue, M.P.; George Granville

Earl Gower; Lord Francis L. Gower, M.P.; Mr. John Labouchere; George Viscount Morpeth, M.P.; the Hon. Granville Ryder; Dudley Viscount Sandon, M.P.; Mr. C. Baring Wall, M.P.; Mr. Alexander R. Warrand; and the Hon. J. Stuart Wortley, M.P. The Treasurer was Mr. J. Labouchere: Mr. T. S. Tull acted as Secretary, and Dr. Birkbeck was the chairman of the Committee of Inspection.

The exhibition was opened on Monday, June the twenty-third, 1828, and it was described by the following long title:—"The National Repository for the Exhibition of Specimens of New and Improved Productions of the Artisans and Manufacturers of the United Kingdom, Royal Mews, Charing Cross." The public never accept a long name for a book or a building, and much in the same fashion as the "Great International Exhibition of 1851" found itself re-named "The World's Fair," or the "Crystal Palace," this forerunner of industrial exhibitions found itself simply called the "National Repository."

The outline of plan put forward by the managing Committee consisted of the following divisions:—Under the "first class" were brought in any "entirely new and ingenious constructions where a new principle is discovered, or one before known, but never practically adopted, is brought into operation." Under the "second class" were arranged any "new adaptation of some known principle, but in a manner essentially different from all that has been done before in that line of manufacture or mechanical workmanship." Under the "third class" were brought in "all improvements upon a discovery already made, by which the preparation of any article is facilitated, or its utility increased." Permission was also given to exhibit in this class all objects which were highly finished, or which "distinguished themselves by exquisite taste; likewise every description of elaborate workmanship, such as would not find a place in an exhibition of arts."

The under-committees of inspection were five in number; one governed by a chairman who was by profession a civil engineer; another governed by a chairman well acquainted with chemistry and the chemical arts; a third governed by a chairman well acquainted with silk, cotton, and woollen manufactures; a fourth governed by a chairman who was a mathematical instrument maker; and the fifth governed by a chairman who was well acquainted with workmanship in all kinds of metals.

It was resolved that the decision of the under-committees, with regard to the selection of articles submitted to their inspection, as well as to the class to which they might belong, should be final when signed by the chairman of the General Committee of Inspection. It was also resolved that the Presidents, Vice-Presidents, and Secretaries of all the Mechanics' Institutions in the United Kingdom should be invited to take on them the office of Committee of Inspection, with power to add to their number in their respective districts, and with the same power of deciding upon the admission of articles as the London Under-Committees of Inspection.

No charge for space in the building was made on any articles approved of by the committees of inspection, but all specimens had to be left under the control of the board of management until the close of the exhibition; then they were returned to their owners, unless they had been sold by request, in which case the exhibitor received his money instead of his goods.

When the building was thrown open on the appointed day, a great number of persons of all ranks hastened to inspect the articles exhibited. An extensive gallery, which ran from end to end of the King's Mews, had been neatly fitted up for the display, and various specimens of curious and highly-wrought manufactures, models of looms, bridges, &c., &c., and samples of useful and improved articles for domestic comfort or foreign commerce were arrayed with labels descriptive of the peculiar qualities which obtained them admission. A model of a chapel, and of a number of weavers in the act of weaving a piece of *Gros de Naples*, were also exhibited, to the great horror of a rather unfriendly critic. "If," he exclaimed, "the exhibition at Romani's cheap hosiery shop, Cheapside, of a stocking-weaver working at his loom is quackery, what is this?"

There were no "special correspondents" of newspapers—no graphic reporters, in 1828, and therefore the accounts we get of this exhibition are dry and business-like. We are told of "beautifully executed works in chasing and cutlery," of "weaving in silks of remarkable patterns," of "models of engines and machinery for many purposes," of "little-known manufactures," and of "a multitude of curiosities;" but no word-pictures of the display are attempted, and when the reporter enters into more minute details, it is generally in no very friendly spirit that he does so.

Public opinion, in one of its surly moods, rose up and called the "National Repository" a "toy-shop." As nicknames go a long way in an argument, this was considered to be a severe hit, and public opinion was encouraged to renew the attack. It walked round the unfortunate exhibition, selected all the weakest points, probed them without mercy and without judgment, knocked the exhibitors down, leaped upon their models, admitted the respectability of the managing committee while it accused them of being fools; and, in fact, behaved in that overbearing way too common with public opinion when asked to tolerate a novel experiment. It accused the exhibition of being paltry, and said if it was indeed national, the nation was never before shown in so contemptible a light. It affected to remember that such exhibitions were had recourse to in France and Holland, in order to excite a manufacturing spirit in the people of those countries, and to enable them to dispense with the wares of England. Bonaparte—the great bugbear—was held to have been at the bottom of it all,—striving to close the Continent against us, and to bring ruin on our trade and manufactures. Public opinion shook the British manufacturer by the hand, and congratulated him on the envied ascendancy he had maintained in spite of all his supposed rivals and enemies had done or could possibly do. It was not surprised that the English people should brood over these facts as they were called, and should frown on any attempt to introduce what it erroneously styled a foreign institution. It thought that no person could be so blind as not to see, that to foster such exhibitions would only be to adopt the stale device of an enemy. It boldly announced that France had turned her back at last upon these displays, and had resolved to hold no more, being convinced that they were more injurious than useful. The assertion was incorrect, and we may therefore regard the inference as unreliable. Public opinion is not always right, and in this case it was eminently wrong.

The "National Repository," thus hunted down by those who ought to have been its friends, could not boast of a very profitable existence. It struggled

through with some four exhibitions of decreasing merit, and, like an actor who persists in keeping the stage too long, its last appearance gave its enemies fair material for banter. It was called the "exotic thing," and although its critics professed to have no desire to exult over the failure of good intentions, still they did exult considerably. The "exotic thing" was shown up in a good deal of the three-notes-of-admiration style of writing, and was broken on the arithmetical wheel. As it had only collected sixty specimens of industrial art for this fourth exhibition, and there were five hundred and fifty manufacturing towns in England, Scotland, and Ireland, it was easily shown that this only gave one invention to every nine towns. The keen-eyed critic was much shocked, on looking a little deeper into the exhibition, to find that at least eight of the sixty specimens exhibited were the production of foreigners; but he abstained from asking what the country was coming to. He was ungallantly severe upon certain "young misses of the Minorities and the Gravel Pits," who had contributed "scissors-and-pencil work" to the exhibition—"pretty imitations of Nature," as it was called in the catalogue. The shilling a head charged for admission was considered dear, and the "exotic thing" was consigned to oblivion as a fourth-rate bazaar.

When it left the "King's Mews" in the following year (1833), and carried on its withered business for a short time at a room in Leicester Square, it was still followed by a few barking enemies. It was contrasted disadvantageously with the "National Gallery of Practical Science"—the "Adelaide Gallery" in the Strand—which started with the attraction of many electrical machines, a noisy steam gun, and an electrical eel, gradually sunk into a casino, and is now an echoing desert.

SOCIETY OF ARTS' HOUSE.

CHAPTER III.

THE SOCIETY OF ARTS.

DURING this time the Society of Arts had kept the lamp burning. In 1829, the Secretary of the Society read papers on several of the leading industries of the country, and from this date specimens of raw materials, manufactures, and new inventions were frequently collected in the old rooms in the Adelphi, for the instruction of the members and the public. Then followed local Trade Exhibitions, held at Manchester, Birmingham, Leeds, Dublin, and other places; and the Exhibition of Manufactures at the Free-Trade Bazaar, held in Covent Garden Theatre, in 1845. In that year the Society of Arts tried to revive the idea of forming periodical exhibitions of industrial products in England on the plan of the French Expositions. A Committee of the Council of the Society was appointed to make the necessary inquiries as to the willingness of manufacturers to contribute their productions to such an exhibition, and a fund was subscribed for the purpose of meeting the preliminary expenses, but owing to the want of sympathy on the part of the manufacturers the project was not then proceeded with. The English people were then

very imperfectly acquainted with the value of such exhibitions. They required to be educated on this point, and education had to be provided.

The Society of Arts had been losing strength for many years, when it was aroused to a new course of life in 1846 by its Royal President. The Prince Consort advised its Council, that the action of the Society most likely to prove immediately beneficial to the public and itself, would be that which would encourage most efficiently the application of the Fine Arts to our Manufactures.

To carry out this idea, the Council at once established a Special Prize Fund, and offered premiums and medals for the production of manufactured articles of simple form—for colours to be used in porcelain, and capable of resisting the action of acids, but not then used in England, and for excellence in combined form and colour. The object of these prizes was to promote a love for the beautiful, by supplying articles of elegant form, made of cheap materials, and suited to the uses of every-day life. The first competitive designs were to be sent in to the Society on or before the fifteenth of May, 1846, and amongst the articles received at that date, was a tea-service in one colour, manufactured by the Messrs. Minton, to which the Society of Arts awarded its special prize. It might be said that the Great Exhibition of 1851 was founded on a teacup, for upon this tea-service, and the jugs, mugs, and other articles rewarded with prizes in 1846, the whole subsequent action of the Society relative to exhibitions was based.

The articles rewarded with prizes in 1846, together with those sent in for competition in 1847, formed the basis of the first exhibition of "Select Specimens of British Manufactures and Decorative Art," which was opened at the house of the Society of Arts in March, 1847. The introduction to the catalogue sets forth the object of the exhibition in the following words:—"The Exhibition of Select Specimens of British Manufactures and Decorative Art is the commencement of a series of annual exhibitions, by means of which the Society hopes to contribute essentially to the progress of those objects for the encouragement of which it was originally instituted." "The first step in the improvement of an art or manufacture is the knowledge of what has already been done in that art or manufacture." "To make improvements with advantage we should begin at the very summit of that perfection which has already been attained. It is for this reason that the Society of Arts have now thought it to be their duty to exhibit each year in some department of arts or manufactures, the degree of perfection that has already been attained."

"We have no doubt that after the eyes of the public are familiarized with specimens of the best decorative art, they will prefer them to subjects which are vulgar and gaudy; and that after a series of such annual exhibitions, no manufacturer will have to complain that his best productions are left on his hands, and his worst preferred."

Manufacturers were slow in agreeing with the Society of Arts about the value of these exhibitions. Very few competitors came forward in 1846, and it was with difficulty the judges could find subjects worthy of reward. The exhibition of 1847 would have been a total failure but for two individuals, who made it a point of personal favour with a few great manufacturers, to be permitted to select from their stores a sufficient number of articles to make a show. The result was highly satisfactory. Twenty thousand people visited the exhibition, and the Council arranged a third

display, which was opened in March, 1848. This time the contributions from manufacturers were sent in unsolicited, and even forced upon the Society, and upwards of seventy thousand persons visited the Society's rooms. So great and genuine was the success of this exhibition considered, that in a paper read to the Society on the eighth of March, 1848, it was proposed to obtain the loan of a selection of the articles exhibited, and to circulate them through the country wherever Schools of Design existed. It was also proposed, "with the co-operation of the Board of Trade, that the Society of Arts should, every fourth year, make a collected exhibition of the principal subjects exhibited in the previous three years, and of others expressly prepared for the special purpose, and that such national exhibition should take place in some large building purposely provided, if not at the cost of the Government, at least with the government sanction."

The eyes of the Society were still directed affectionately to Trafalgar Square, as a spot flavoured with exhibition facts and associations, and an open space which could afford to bear a large temporary building. Some thought that the square of Somerset House would be the best site, and another party opened negotiations with the proprietor of the Baker Street Bazaar. It was proposed that the Society of Arts should collect the articles to be exhibited, and manage the money details of the exhibition. The admission was to be partly free and partly by payment, and the receipts were to be applied to the expenses incurred in paying for honorary medals and rewards, and to form a fund for future exhibitions.

A deputation from the Society of Arts waited upon the President of the Board of Trade to submit this scheme. Mr. Lefevre, the Secretary of the Board of Trade, formed one of the deputation, and, as a member of the Society of Arts, he pointed out the advantages which the Schools of Design would derive from the liberal offer of the Society. Mr. Labouchere, the President, immediately accepted this offer, and promised the deputation the co-operation of the Board in carrying out the proposed plan for giving the provincial Schools of Design the benefit of the periodical exhibitions of the Society of Arts. He also expressed a deep interest in the proposed national exhibition, and referred the deputation to the Chairman of the Woods and Forests (Lord Morpeth) to arrange the site for the necessary building.

The Society's exhibition of manufactures in 1848 was followed by an exhibition of pure Art—known as the "Mulready Exhibition"—in June of the same year, and at the opening of the Society's Session in November, 1848, its first exhibition of models of machinery was announced to take place in January, 1849. This formed the beginning of a series of exhibitions of inventions, which have been held annually from that time in the Society's rooms, each year proving, by the increased applications for space, that the ordinary resources of the Society of Arts were becoming less and less sufficient to meet the growing interest of the public in such collections.

In the spring of 1848, the third general "Exhibition of Recent Specimens of British Manufactures and Decorative Art" was held at the old house in the Adelphi. It was far more successful than the former exhibition; the visitors were more numerous, the articles sent in were of a superior quality, and the public taste was better educated to appreciate their excellence. This exhibition was closely followed by a second art display—known as the "Etty Exhibition"—which took place in the same rooms in June, 1849.

Eighteen hundred and forty-nine was the eventful year in which the industrial scheme began to show signs of unmistakable life. In that year an exhibition of manufactures and art in connection with the meeting of the British Association for the Advancement of Science was held at Birmingham with very encouraging results. In France, the National Exposition of that year also met with unusual success, and coming as it did just as this country had embarked on its career of partial free-trade, it gave a fresh impulse to the idea of holding a Great National Exhibition of British Industry.

On the occasion of the opening of the third exhibition of British manufactures at the rooms of the Society of Arts, on the seventh of March, 1849, we find the following remarks in the address of the Council read to the members:—

“The Society is aware that the exhibitions, necessarily limited each year to certain classes of manufactures, are only parts of a series of displays which it is proposed shall culminate every fifth year in a Great National Exhibition embracing *all* manufactures.

“The revolution of the first fifth year will arrive in 1851, and the Council feel that it will be necessary forthwith to mature those arrangements for giving due effect to this event, which have already been successfully instituted and carried to a certain point with the President of the Board of Trade and the Chief Commissioner of Woods and Forests. The Board of Trade has already promised co-operation, and the Chief Commissioner of Woods, a suitable site for the building in which the exhibition may be made. It only remains for the Government to take the risk of providing a temporary building of dimensions sufficiently ample for the purpose. The Society of Arts, having practically demonstrated the means of establishing such exhibitions, and educated most successfully a numerous public of all classes of society to appreciate them and crowd to see them; having induced the noble designers, most eminent manufacturers, ingenious mechanics, skilled workmen, and men of science, to assist in these exhibitions; having been aided by the active co-operation and good-will of the most distinguished nobles,—the Council feel that they shall be warranted in preferring a request to Her Majesty’s Government to do its part in this great object, and to provide once in every fifth year a suitable building in which national exhibitions, duly representing the best productions in all branches of manufactures, may be found.”

At the distribution of prizes awarded by the Society, and presented by the Prince Consort on the fourteenth of June, 1849, just after the exhibition of British manufactures had closed, so great had been the success of that exhibition over all the preceding exhibitions, that it was stated that the great object of a national exhibition of industry was more likely than it had ever before appeared to be carried out to a successful issue.

The promoters of this scheme only contemplated a national exhibition, and they asked for pecuniary aid from Government to enable them to carry it out.

DESIGN OF BUILDING COMMITTEE, 1851.

CHAPTER IV.

EARLY STRUGGLES OF THE FIRST INTERNATIONAL EXHIBITION.

MANY have advanced claims since 1851 to be considered the originators of the proposition for holding universal or international exhibitions. There have not been quite so many claimants for the honour as came forward to assert a parental right over the new rifle movement, but they have been sufficiently numerous and self-confident. Amongst the mass of claims—some of them of the wildest kind—there is one which must be generally admitted. M. Boncher de Perthes, President of the *Société Royale d'Emulation* of Abbeville, boldly recommended the holding of an "Exposition Universelle" in the year 1834, in an address which he then delivered to that Society. It may be found in the published records of that Institution (at page 517), and is reprinted in *Le Petit Glossaire* of the same author in 1835. The following is a close translation of this remarkable speech, so full of enlarged views, too liberal for the time:—

"Let us work, but let us be tolerant, and look upon every workman as a brother, whatever be his name, his colour, or his country. Let us not quarrel with competition. That alone will enlighten us, and point out the true path of our industry. It is competition which makes the good workman, because it is competition which indicates to each one his proper task. Exhibitions which have so beneficial an influence upon industry are but an embodiment of this rivalry. It is here that the producer brings the fruit of his labour side by side with that of his neighbour,—takes the measure of his efforts, estimates the merits of his productions, and sitting,

so to speak, in judgment upon himself, learns more in one day than he could have learnt in one year of isolation and monopoly.

“Yes; exhibitions are better than prohibitions, which tend only to separate men and isolate them. Why then are these exhibitions still restrained within narrow limits? Why are they not instituted upon a scale truly large and liberal? Why should we be afraid to open our halls to manufacturers whom we call foreign;—to the Belgians;—to the English;—to the Swiss;—to the Germans? How noble would be a European Exhibition, and what a mine of instruction it would offer for all! Do you imagine that the country in which it should take place would be a loser by it? Do you believe that if the *Place de la Concorde*, opened this first of May, 1834, to the productions of French industry, should be opened to productions of the whole world,—do you believe, I say, that Paris, that France, would suffer, or that we should, in consequence, produce less, or become inferior? No, Gentlemen: France would not suffer any more than the foreigner; nor our city more than the capital. Exhibitions are always beneficial, and beneficial to all.”

To give utterance to an idea is one thing, but to create the thing thought of is another. France may claim the idea of international exhibitions, but England must possess the credit of being the first to realize them. The Prince Consort, whose sound practical advice to the dying Society of Arts had restored them to new life, was the first to take the Society's plan for an enlarged national display in hand, and to mould it into a universal exhibition. His views were broader than the European circle in which M. Boucher de Perthes wished to confine his scheme, and all the nations of the earth were invited to free competition.

At a meeting held at Buckingham Palace on the twenty-ninth of June, 1849—the minutes of which are given in Mr. Henry Cole's Introduction to the Illustrated Catalogue of 1851—the Prince Consort suggested the four great divisions—of *Raw Material—Machinery and Mechanical Inventions—Manufactures—and Sculpture and Plastic Art*—of which he proposed the Great Exhibition should consist. He likewise disposed of all questions about the site for a building by suggesting the occupation of that vacant ground in Hyde Park, which afterwards contained the renowned “Crystal Palace.” The questions of premiums, or prizes, to manufacturers,—of a Royal Commission to give weight and authority to the plan and to aid in carrying it out,—and of a broad popular subscription to be organized by the Society of Arts, were also discussed and settled. Above all, the international character of the proposed exhibition was fixed in the following words:—“It is considered that, whilst it appears an error to fix any limitation to the productions of machinery, science, and taste, which are of no country, but belong as a whole to the civilized world, particular advantage to British industry might be derived from placing it in fair competition with that of other nations.”

A second meeting was held at Osborne on the fourteenth of July in the same year, at which a general outline of a plan of operations was submitted, and the details were more fully discussed with the President of the Board of Trade. On the thirty-first of July, 1849, the Prince Consort, in his capacity of President of the Society of Arts, addressed a letter to the Home Secretary, Sir George Grey, in order to bring the subject officially under the notice of Her Majesty's Government, and the answer received was prompt and satisfactory.

The next step was taken by the Society of Arts, acting under the direction of the Prince Consort. As funds were required to set the machinery in motion, and the ordinary resources of the Society were not available for such a purpose, it became necessary to provide for an estimated outlay in building and preliminary expenses of seventy thousand pounds. In this position they were compelled at the commencement of their proceedings to make an arrangement with a firm—Messrs. James and George Mnnday—willing to advance the sums likely to be required, in consideration of a share in the contingent profits. The proportion of this share was at first fixed, but afterwards, at the request of the Society of Arts, it was left to be decided at the close of the exhibition by arbitrators chosen on both sides. A clause was introduced in the agreement, giving the Society of Arts power to cancel it if requested to do so by the Lords of Her Majesty's Treasury within a specified period, provision being made for the repayment to the Messrs. Mnnday of any sum that might have been advanced by them, together with a fair compensation for the outlay and risk which they might have incurred.

At this period so little was known of the general feeling of manufacturers and agriculturists towards such displays in this country, that a commission, consisting of Mr. Henry Cole and Mr. Francis Fuller, was appointed to visit the principal towns in England, Ireland, and Scotland, and collect opinions from the leading men. The result was most satisfactory. On the point of the *general expediency of such periodical exhibitions* they met with the most perfect unanimity in all parts of the country, and expressions of surprise, if not of regret, that England should have been so slow in instituting such an exhibition. It was considered that the benefits of the exhibition would be great, individually and nationally; that great good had been done on the Continent by such displays; and that the broader the competition the better would it be for all. A willingness to exhibit was found to be general; and on the point of *whether prizes should be awarded*, although it was considered that the best prize was commercial success, it was admitted that the wholesome rivalry caused by worthy prizes would be beneficial if a thoroughly impartial distribution could be secured.

On the important point of *whether such exhibitions should be supported by a national grant or by voluntary subscriptions*, the preponderance of opinions was in favour of the voluntary principle; and it was generally considered that if the financial aid of Government were sought, the public would feel themselves relieved in a great measure from the necessity of assisting.

Fifty towns were visited after this, and meetings were held, at all of which favourable resolutions were passed; and by January, 1850, the names of sixty thousand influential persons had been obtained as supporters of the great plan.

While the Society of Arts, through their commissioners, were thus canvassing the country, they judged it to be wise to put themselves in possession of what the French people had done in promoting such undertakings. Mr. Digby Wyatt therefore, acting under their instructions, prepared an elaborate analytical report upon the French Exposition of 1849, with an historical sketch of all previous French expositions.

Before the plan however was adopted by the country, a dinner was given at the Mansion House in May, 1850, by Mr. Farncomb, then Lord Mayor of London, to promote the exhibition. At this banquet the Prince Consort placed

the subject with great force and clearness before the municipal authorities assembled, and, through the press, before the whole country the next morning. In his own words, the collection and exhibition in one building of the Works of Industry of All Nations was "to give a true test and a living picture of the point of development at which the whole of mankind had arrived in this great task, and a new starting-point from which all nations will be able to direct their further exertions."

EXHIBITION, 1851.—END VIEW.

CHAPTER V.

THE ROYAL COMMISSION.

UPON the presentation of the reports prepared under the direction of the Society of Arts, the Queen was pleased to issue a Royal Commission, which was published in the London Gazette of the third of January, 1850. It provided—that a full and diligent inquiry should be made into the best mode by which the productions of English colonies and foreign countries might be introduced into the kingdom, as to the site for and the general conduct of the proposed exhibition, and as to the best mode of determining the nature of the prizes, and of securing the most impartial distribution of them. It also provided for the appointment of local commissioners where they were required in England or abroad, and for their removal if necessary, and a power to summons witnesses for examination. Under this Commission the following appointments were made :—

HER MAJESTY'S COMMISSIONERS.

PRESIDENT, HIS ROYAL HIGHNESS PRINCE ALBERT, K.G., F.R.S.

HIS GRACE THE DUKE OF BUCCLEUCH, K.G., F.R.S.

RT. HON. THE EARL OF ROSSE, K.P., Pr. of R.S.

RT. HON. THE EARL OF ELLESMERE, F.S.A.

RT. HON. THE EARL GRANVILLE.

RT. HON. LORD STANLEY.

RT. HON. LORD OVERSTONE.

RT. HON. LORD JOHN RUSSELL, M.P., F.R.S.

RT. HON. HENRY LABOUCHERE, M.P.

RT. HON. W. E. GLADSTONE, M.P.

SIR RICHARD WESTMACOTT, R.A.

SIR CHARLES LYELL, F.R.S.

SIR CHARLES LOCK EASTLAKE, P.R.A., F.R.S.

THOMAS BARING, Esq., M.P.

CHARLES BARRY, Esq., R.A., F.R.S.

THOMAS BAZLEY, Esq.

RICHARD COBDEN, Esq., M.P.

THE PRESIDENT OF THE INSTITUTION OF CIVIL
ENGINEERS.

THOMAS FIELD GIBSON, ESQ.

JOHN GOTT, ESQ.

THE PRESIDENT OF THE GEOLOGICAL SOCIETY.

PHILIP PUSEY, ESQ., M.P., F.R.S.

JOHN SHEPHERD, ESQ., Chairman of the Hon. East
India Company (Successor to Sir Archibald Galloway,
K.C.B., &c., who died in 1850).

ROBERT STEPHENSON, ESQ., M.P., F.R.S. (appointed
on his resignation of the Chairmanship of the Execu-
tive Committee).

ALDERMAN THOMPSON, M.P.

J. SCOTT RUSSELL, ESQ., F.R.S.,

SIR STAFFORD HENRY NORTHCOTE, BART., C.B., } *Secretaries.*

EDGAR A. BOWRING, *Acting Secretary.*

The TRUSTEES appointed by the Society of Arts for the Prize Fund of twenty thousand pounds, were :—

THE RIGHT HON. THE EARL OF CLARENDON,
K.G.

SIR JOHN PETER BOILLEAU, BART.

JAMES COURTHOPE PEACHE, ESQ.

The TREASURERS for all receipts arising from donations, subscriptions, or any other source on behalf of or towards the proposed exhibition, appointed by the Society of Arts, were :—

ARTHUR KETT BARCLAY, ESQ.

WILLIAM COTTON, ESQ.

SIR JOHN WILLIAM LUBBOCK, BART.

SAMUEL MORTON FELTO, ESQ.

BARON LIONEL DE ROTHSCHILD.

These appointments were confirmed by the Royal Commissioners.

The TREASURERS for payment of all executive expenses, appointed by the Society of Arts, were :—

PETER LE NEVE FOSTER, ESQ.

JOSEPH PAYNE, ESQ.

THOMAS WINKWORTH, ESQ.

The Executive Committee, four members of which were originally appointed by the Society of Arts before the issuing of the Commission, and one member of which, Mr. George Drew, was appointed to watch the interests of the money contractors, Messrs. Munday, were :—

HENRY COLE, ESQ.

CHARLES WENTWORTH DILKE, ESQ. (the younger).

FRANCIS FULLER, ESQ.

ROBERT STEPHENSON, ESQ. (subsequently replaced by
LIEUT.-COL. REID).

GEORGE DREW, ESQ. (who subsequently withdrew).

MATTHEW DIGBY WYATT, ESQ., *Secretary.*

The duties of this Committee were “to carry the exhibition into effect, under the directions of the Prince Consort and the Commissioners.”

A Special General Meeting of the Members of the Society of Arts, in conformity with a requisition presented to the Council of that body, was held on the eighth of February, 1850, “to consider the position of the Society with respect to the Industrial Exhibition proposed to be held in 1851.” At this meeting Mr. Scott Russell read a statement of the preliminary steps which had been taken, and the Society resolved that the scheme of the Prince Consort was worthy of him, and of the hearty co-operation of the members, and it pledged itself to promote the success of the undertaking in every way. It resolved that a subscription list for this purpose should be opened at the house of the Society of Arts, and that the members should be requested to use their exertions to get it filled.

At the first meeting of the Royal Commission the subject of the contract with the Messrs. Munday was taken into consideration. It was thought that the

exhibition would stand on a much firmer, because more popular, basis, if the wishes of the leading traders of England, as set forth in the report of Messrs. Cole and Fuller, were acted upon, and the whole burden of the scheme thrown upon voluntary contributions. In arriving at this conclusion the Commissioners announced that they did not intend to cast any slur upon the contract. They were fully convinced that it had been entered into with the best intentions by the Society of Arts, and with a most liberal spirit by the Messrs. Munday, and that its conditions were strictly reasonable and, indeed, favourable to the public. They judged, however, that the maintenance of any contract giving to a great national undertaking the appearance of a private speculation would not be agreeable to the public, and would endanger the success of the exhibition both at home and abroad. Upon these grounds they addressed a request to the Lords of the Treasury, that their Lordships would exercise the power—before alluded to—reserved to them in the contract between the Society of Arts and the Messrs. Munday, of requesting the former body to give immediate notice of their intention to determine the contract. In order to make this request valid, it was necessary that the Lords of the Treasury should intimate their willingness to take upon themselves the responsibility of repaying to the Messrs. Munday the sums already advanced by them, together with such amount of compensation as arbitrators might award to them. As it had been understood, however, from the first issue of the Commission that no part of the funds for carrying on the exhibition was to come out of Her Majesty's Exchequer, the Lords of the Treasury required that, before making such an intimation to the Society of Arts, they should receive from the Royal Commission an assurance that the necessary sum should be forthcoming when wanted, which assurance the Commissioners gave.

The amounts advanced by the Messrs. Munday were twenty thousand pounds sterling invested for the Prize Fund, and two thousand five hundred pounds advanced for general purposes. This sum was repaid, with interest, on the twenty-second of November, 1850; and the question of compensation for loss of time, personal services, and risk having been referred, by mutual consent, to Mr. Robert Stephenson, that gentleman, after a full inquiry into the circumstances, and after hearing counsel on the case, ultimately awarded five thousand one hundred and twenty pounds and the costs to the Messrs. Munday, which sum was paid.

The Commission defined the functions of the Commissioners to be only those of inquiry and general direction, while the pecuniary responsibilities and the performance of the executive duties were to fall on the Society of Arts; but the cancelling of Messrs. Munday's contract altered this, and placed the whole responsibility on the shoulders of the Commissioners. The Executive Committee therefore felt it becoming to tender their resignation, which was not accepted, and arrangements were made to meet the altered circumstances of the case. Her Majesty was advised to issue supplementary commissions, appointing Mr. Robert Stephenson, M.P., a Commissioner, upon his resignation as Chairman of the Executive Committee (before alluded to), and Lieutenant-Colonel W. Reid, R.E., in his place. Messrs. Munday, and their representative, Mr. George Drew, from this time ceased to attend the meetings of the Executive Committee.

The Commissioners now appealed directly to the public to contribute to this great national undertaking. A subscription list was opened, and they announced

to the public that they were exclusively responsible for the application of the funds, and would insure an effectual control over the expenditure, and a proper audit of the accounts. The Council of the Society of Arts felt, with the Government, that the broad scheme suggested by the Prince Consort merited being made a national undertaking, and they therefore resigned the work of realization to the Royal Commission without a murmur. In determining the contract with the Messrs. Munday, they made no conditions with the Royal Commissioners as to the appropriation of any probable surplus arising from the exhibition. They said, in an address to the general body of Members on the twenty-second of July, 1850, "the exhibition is now being carried out under the Prince Consort even on a larger scale than the Society had originally meditated. The satisfaction with which the extension of plan, so peculiarly their own, has been viewed by the Society, is testified to by the fact that the members have contributed in their several localities no less a sum than six thousand one hundred and eighty-seven pounds, in addition to a further sum of eleven hundred and one pounds paid into the hands of the Treasurers at the Society's house in answer to an appeal made to them in February." This amount may appear small, compared with the sum readily subscribed by Members of the Society under the Guarantee Deed for the Exhibition of 1862; but public confidence in such undertakings has grown even more rapidly than the undertakings themselves.

The subscriptions promised to the Commissioners were made public from time to time. The total amount reported was seventy-nine thousand two hundred and twenty-four pounds thirteen shillings and fourpence, of which sum sixty-seven thousand eight hundred and ninety-six pounds twelve shillings and ninepence had been actually paid to the credit of the Commission on the twenty-ninth of February, 1850. A portion of the subscriptions received in some of the provincial districts was retained to defray the expenses of collection and local management. This amount was only gathered after many laborious meetings in town and country, and the collection occupied so much time, that it was clear some other plan must be adopted, or the International Exhibition be given up.

"At the commencement of the Commissioners' proceedings" (says the First Report of the Commissioners), "while they were incurring no expenses beyond those of the remuneration of their officers and the necessary outlay on printing, advertising, and other comparatively small items, the subscriptions received from time to time were amply sufficient for their wants; and they did not experience any inconvenience from the want of a more definite legal position than that of a mere Commission of Inquiry. When, however, in the month of June, 1850, the plan of a building to cost seventy-nine thousand eight hundred pounds had been approved, and it became necessary that a contract should be made for its erection, questions naturally arose as to the power of the Commission to enter into and to enforce such a contract,—as to the person or persons by whom such a contract should be signed, and the individual responsibility which, by so signing it, they would incur,—and as to the mode in which the money that should be required beyond the amount of the subscriptions received was to be provided."

It was suggested at the last moment to raise money on a guarantee for a much larger sum than was likely to be required, and this sum was fixed at a quarter of a million sterling. A few individuals (amongst whom Sir Samuel Morton Peto

stood prominent) boldly stepped forward to incur the responsibility of signing a guarantee deed to this amount, and the Prince Consort, amongst the few, put his name down for ten thousand pounds. The Commissioners, acting on their doubts about their position, obtained a Royal Charter of Incorporation from Her Majesty, dated August the fifteenth, 1850, and, with the Guarantee Deed in their hands, they were able to obtain what advances they required from the Bank of England. The sums so borrowed, amounting in the whole to thirty-two thousand five hundred pounds, were repaid, with interest, on the twenty-second of May, 1851, out of the receipts at the doors, after the Exhibition had been open for three weeks. The direct control over the whole expenditure of the Commission (subject to the approval of the Commissioners) was exercised by a FINANCE COMMITTEE, consisting of Lord Granville (Chairman), Lord Overstone, Mr. Labouchere, Mr. Gladstone, Sir Alexander Spearman, Mr. T. F. Gibson, Mr. Thos. Baring, Mr. Cobden, and Sir S. Morton Peto, with Mr. Edgar A. Bowring as Secretary.

The business of the Commission was divided amongst several Committees, but the largest share of the work fell upon the Executive Committee. As Mr. Drew withdrew, although invited to remain, and Mr. Fuller stated that he was unable to devote the whole of his time to the exhibition, this Committee was practically reduced to three members,—Sir William Reid, Mr. C. Wentworth Dilke, and Mr. Henry Cole. Their duty required them to exercise continued watchfulness over every part of the vast undertaking. Sir W. Reid more particularly undertook the task of communicating with the public departments, Mr. Henry Cole settled the troublesome questions of space and arrangement, and Mr. C. Wentworth Dilke took charge of the correspondence, and was the general superintendent. To take the letter-work of this Committee alone;—from October, 1849, to December, 1851, inclusive, fifty-one thousand nine hundred and thirteen letters were received, one hundred and sixty-one thousand six hundred and thirty-one letters were sent out, and the amount paid for postage and parcels was nearly fifteen hundred pounds. The greatest number of letters received on one day was five hundred and twenty-two, on the first of March, 1851, during the correspondence relative to space and arrangement. The greatest number despatched on one day was seven thousand eight hundred and thirty-five, on the ninth of October, 1851, when sending out cards of admission to exhibitors and others for the closing of the Exhibition. The papers printed by the chief Committees in carrying on the business of the Exhibition were eleven hundred and thirty-three in number, and they were circulated to the extent of a million and a half of copies.

The local organization begun by the Society of Arts, by which sixty-five district committees were formed, was much extended by the Royal Commissioners. The local committees were increased to two hundred and ninety-seven, and about four hundred and fifty local commissioners were nominated. To insure uniformity of action, and do away with a vast amount of letter-writing, two special travelling commissioners—Dr. Lyon Playfair, and Lieut.-Colonel Lloyd—were appointed to communicate with these local committees. Commissioners were also appointed, or committees formed, in eleven British colonies and thirty foreign countries.

EXHIBITION, 1851—TRANSEPT.

CHAPTER VI.

THE EXHIBITION OF 1851.

WITH all this elaborate organization it was impossible to make any extensive inquiries as to the amount of articles likely to be tendered for exhibition. There was no time to be lost in commencing the building, and it was therefore necessary to lay down some arbitrary rule with regard to space. The Commissioners accordingly fixed the area of the building at eight hundred thousand square feet, or a little more than eighteen acres,—a space between three and four times as large as that occupied by any previous exhibition abroad. The space thus fixed was increased during the carrying out of the undertaking by additional galleries to rather more than one million of square feet.

At the third meeting of the Commissioners, held on the twenty-fourth of January, 1850, they appointed a Building Committee, consisting of:—

THE DUKE OF BUCCLEUCH.
 THE EARL OF ELLESMERE.
 MR. (afterwards SIR CHARLES) BARRY, R.A.
 MR. (afterwards SIR WILLIAM) CUBITT, Pr. I.C.E.
 MR. STEPHENSON, M.P.
 MR. BRUNEL.
 MR. COCKERELL, R.A.
 MR. DONALDSON.

} All Members of the Royal
 Commission.

This Committee held thirty-eight meetings between February the fifth and July the twenty-third, 1850.

The first debate was about a site, and the Commissioners selected the spot in Hyde Park (with the permission of the Crown) which had been originally suggested by the Prince Consort. Out of the twenty acres of land chosen, the Building Committee proposed to cover sixteen acres with buildings, the plan and arrangement of which were to be determined by public competition. An invitation, dated March the thirteenth, 1850, was therefore published, calling upon architects and others for designs.

The eighth of April was the last day fixed for the receipt of these plans, giving barely a month for their execution; but, short as the time was, no less than two hundred and thirty-three designs and specifications were sent in by the appointed date. Twenty-seven of these came from France, two from Belgium, three from Holland, one from Hanover, one from Naples, two from Switzerland, one from Prussia, and one from Hamburgh, making altogether thirty-eight as contributed by foreigners. One hundred and twenty-eight were sent in by Londoners, fifty-one by designers living in the country; six came from Scotland; three from Ireland; and seven were anonymous. One was sent in by "a lady with great diffidence," but the majority were sent in with great confidence. Twelve additional plans were received after the eighth of April, and the whole were publicly exhibited for one month from the tenth of June, at the Institution of Civil Engineers. Some of them sprang from that imaginative school which loves to turn all our black river-side wharves into marble palaces on paper, and dreams of reviving the glories of ancient Babylon at Fleet Ditch. One presented a striking picture of a great central dome depressed at the top, which looked very much like a smashed egg.

The Building Committee reported on the merits of all, dividing the competitors into two lists. One they considered "entitled to favourable and honourable mention;" the other to "further higher honorary distinction." They selected none of the designs, however, and announced that they considered "no single plan so accordant with the peculiar objects in view, either in the principle or detail of its arrangement, as to warrant them recommending it for adoption."

Some of the designs taught the Building Committee what to avoid, while others gave them valuable information. From the careful examination of the various plans many practical conclusions as to the mode of arranging the building were derived. Taking a hint from one and a feature from another, the Committee prepared a design, for the realization of which a complete set of working drawings, specifications, and quantities were prepared under the immediate superintendence of Mr. M. D. Wyatt, Mr. Owen Jones, and Mr. C. H. Wild. Invitations were issued for tenders upon the basis of the plans so prepared, and for any suggestions that might show a way of reducing the estimates of cost. Nineteen tenders were received at the appointed time, the tenth of July, only eight of which were for the entire work.

Objections were raised at this period, chiefly on the part of the public, to the erection of any building in Hyde Park that was not of a light and temporary character. The subject was debated in the House of Commons on the first of July, 1850, and full explanations were given by individual members of the Commission in both Houses. A feeling, however, still prevailed against the employment of

durable materials, and particularly of brickwork, in the erection of the building; and the existence of this feeling induced Mr., now Sir Joseph, Paxton to turn his attention to the subject, and led him to submit a plan for a structure chiefly of glass and iron, similar to those which had been successfully tried by him at Chatsworth. Messrs. Fox, Henderson, and Co. submitted estimates for the construction of the Building suggested by Sir Joseph Paxton, and the Commissioners, after much deliberation, adopted this plan on the twenty-sixth of July, and accepted the tender of the contractors to carry it out for the sum of seventy-nine thousand eight hundred pounds.

The duty of superintending the construction of the building fell upon Sir William Cubitt, who acted on behalf of the Commissioners. The chief gentlemen employed under him were, Mr. Wild, who was responsible for the engineering details; Mr. Owen Jones, who was responsible for the decoration; and Mr. Digby Wyatt, who attended to the general building arrangements, the contracts, and monthly accounts. Mr. Wyatt from that time ceased to act as Secretary to the Executive Committee, although his name was retained in all official documents, so as to avoid inconvenience. Possession of the site was obtained on the thirtieth of July, and a hoarding was immediately erected, enclosing it. The Contract Deed was not actually signed till the thirty-first of October, but the commencement of the works was not delayed for this preliminary, and the first column of the building was fixed as early as the twenty-sixth of September. On the fourteenth of November the Commissioners, to meet the requirements of the Lords of the Treasury and the Commissioners of Woods and Forests, entered into a Deed of Covenant with Her Majesty, binding them to remove the building and to restore the site to the Crown before the first of June, 1852.

Great ingenuity was bestowed upon the adaptation of mechanical contrivances to shorten work during the progress of the building, an elaborate description of which, by Mr. Digby Wyatt, may be found in the first volume of the Illustrated Catalogue for 1851. Numerous tests were applied to the work in its different stages to prove its stability, and so calm the fears of the public on this head. Every cast-iron girder when brought on the ground was weighed, and tried in an hydraulic press. The wrought-iron trusses were carefully examined, and some of the most questionable points in the foundations were tested by being loaded with extraordinary weights. The gallery floors were proved both by fixed and moving loads, and a careful observance of the effect of storms upon every part of the building convinced those intrusted with its charge that there was no chance of its being taken up by a strong wind, as predicted by popular ignorance, and blown like a balloon over Kensington and Chelsea.

The Crystal Palace at Sydenham still shows us an outline of what the Exhibition building was, being mainly built of the materials removed from Hyde Park when the "World's Fair" was over, and the stern provisions of the covenant had to be carried out. Its general plan was a parallelogram, eighteen hundred and forty-eight feet long, and four hundred and eight feet wide; the greatest length running from east to west. There was also a projection on the north side, forty-eight feet wide, and nine hundred and thirty-six feet long. This area, the measure of which in acres has been before stated, was subdivided into twelve avenues of various widths, extending from east to west. The chief passage was seventy-two feet wide

and sixty-three feet high, and this occupied the centre. It was flanked on both sides by passages alternately twenty-four feet and forty-eight feet wide. The first of these side avenues on either side of the centre passage was sixty-three feet high, the next two on either side were forty-three feet high, and the remainder were all twenty-three feet high. About the middle of the building, taking it lengthways, these avenues were cut through at right angles by a transept seventy-two feet wide, the half-circular roof of which rose to a height of one hundred and eight feet, enclosing a row of huge elm-trees.

Two other groups of trees on the ground gave rise to open courts which were enclosed within the building, and thus Nature stood on terms of good-fellowship with Art.

The total area roofed over was equal to about eighteen acres and a quarter, and nearly two hundred and ninety-four thousand panes of glass were used, the bulk of them being forty-nine inches long by ten inches broad. The avenues just mentioned were formed by rows of hollow cast-iron columns, eight inches in diameter, which acted as supports for the building, and rain-water drains. They were placed in lines twenty-four feet from each other, and rose in one, two, and three tiers to uphold the roof at the different levels before named. In the lower tier these columns were nineteen feet long, and in the two upper tiers they were seventeen feet. Between each of them were inserted short pieces, each three feet long, of such a shape that they served to support girders in horizontal tiers at three different levels; the bases of the columns were also separate pieces, and they varied in length to suit the different levels of the site. Three thousand three hundred columns were fitted up altogether, and reckoning the different articles made of cast and wrought iron which helped to form the building, there were five hundred and thirty-seven thousand and eighty-two separate pieces, representing over four thousand four hundred and eighty-six tons. Nearly two thousand yards of four and five-inch gas-pipes were laid down; the wrought timber used amounted to two hundred and sixty-five thousand pieces, or more than a million and a third of lineal feet, and the rough timber to nearly four hundred and thirteen thousand cubic feet.

The girders, part of which were of cast and part of wrought iron, were all three feet deep (with the exception of four in the roof at the intersection of the nave and transept, which were six feet deep), thus producing unbroken horizontal lines through every part of the building. These girders were all alike, and they formed a lattice-work combining great strength with lightness of appearance. All the twenty-four feet girders were of cast iron, and of these there were two thousand one hundred and fifty. The roof trusses, of greater length, three hundred and seventy-two in number, were made chiefly of wrought iron, the general lines being the same as in the cast-iron girders.

The lower tier of girders in parts of the building more than one story in height, formed the support for the floor of the galleries, which were twenty-four feet wide, and extended the whole length of the palace in four parallel lines, two on each side of the centre avenue, interrupted only by the transept, round the ends of which they were continued. Many cross galleries connected the long lines, and the additional space thus obtained was over two hundred and seventeen thousand square feet. The floor of the galleries consisted of cross beams, under-trussed, so as to distribute the whole weight brought upon the floor pretty equally upon the eight

points at which the ends of the beams rested on the cast-iron girders. Upon this foundation were fixed the ordinary floor-joists and floor. The galleries were reached by ten double staircases, with flights eight feet wide, so arranged as to communicate equally with either of the two lines of gallery between which they were placed. In those parts of the building which were more than two stories in height there was a second horizontal tier of girders twenty feet above the gallery, which served to give stiffness to the columns between which they were fixed. The upper tier of girders and trusses in all cases supported the roof, which was the most novel and interesting part of the building. In its general form it was flat, but in detail it consisted of a series of ridges and furrows, the rise and fall of which was not very great. As the roof, girders, and trusses were twenty-four feet apart lengthways, they were made to carry the main gutters on their upper edge in the transverse direction of the building. The space between these was spanned by light wood beams or rafters, contrived so as to support the glass roof, and to carry into the main gutters the rain-water and the condensed vapour formed under it at the same time. The total length of the gutters used was nearly twenty-four miles. Between these rafters the glass roof was supported by light wooden sash-bars sloping upwards at an inclination of two and a half to one. The advantage of this form of roofing for large areas was its great lightness and economy. The glass of the roof was fixed into the sash-bars, which were grooved to receive it. About two hundred miles of sash-bars and eight hundred and ninety-six thousand square feet of glass were required for the roof; and the whole weight of glass used was about four hundred tons.

The outer enclosure of the building was formed by dividing the twenty-four feet spaces between the iron columns into three panels; those on the lower story were filled in with boarding, those in the upper story with glazed sashes. Metal louvres, fixed in frames three feet high, were introduced at the top of each story round the entire circuit of the building, and in the lower story similar ventilating frames formed a plinth four feet high immediately above the floor. The total ventilating surface thus obtained amounted to nearly forty-one thousand square feet, or very nearly one acre. Each story was crowned outside with a cornice and cresting ornament, and over the column posts were carried up, to which flagstaffs were fixed.

Three entrances were provided, one in the centre of the south side and one at each end of the building; and in order to make the departure of large crowds easy, seventeen other doors were provided for exit only. The floor was entirely boarded, and on the ground floor spaces of about half an inch were left between the boards to allow the dirt to pass through. Much money and jewelry passed between these boards along with the dirt, and the right of searching for these valuables was bought from the contractors when the building was taken down. The gallery floor, unlike the ground floor, was closely boarded and tongued, to prevent the passage of dust.

The roof of the transept has been mentioned as having been half-circular instead of flat, like that of the remainder of the building. This roof was supported by arched timber ribs placed twenty-four feet apart, or one over every column, the tops forming sockets into the end of which the feet of the ribs were fixed. Horizontal timbers between these supported minor ribs at distances of eight feet, and upon these a ridge and furrow roof was constructed in a manner similar to that already described, but following the curve of the arched ribs instead of being worked on a horizontal plane. A narrow gallery was constructed along the ridge of

the arched roof, that workmen might go up to do the necessary repairs. The ends of the transept were filled in with fan-like tracery and glazed sashes. The only portion of untransparent roofing in the whole building was on both sides of the arched roof just described, where there was a lead flat twenty-four feet wide, which afforded the opportunity of giving some additional strength to resist any tendency in the arched ribs to spread outwards at the springing. During most of the time while the work was in full activity, more than two thousand men were employed on the ground, with four powerful steam-engines.

Many important additions were made to the building as originally undertaken by Messrs. Fox and Henderson for the sum of seventy-nine thousand eight hundred pounds. The ventilating contrivances were increased, the galleries were doubled in extent; the outer railing, the gas-lighting, both external and internal, extra offices, staircases, and refreshment accommodation were provided, and a considerable extent of additional area was enclosed. The planing of the floor, the ornamental painting, both inside and outside, the boiler-house and its connections with the main building, provision of water for fountains, and increased provision for safety from fire, the entire enclosure and separation of the department of machinery in motion, and many other important additions served greatly to increase the difficulty of completing the work within the given time, as well as to considerably raise the cost. The total amount at which the whole of the bills for the building on use and waste terms were settled, after careful examination on the part of Sir William Cubitt and the officers responsible to him, was one hundred and seven thousand seven hundred and eighty pounds seven shillings and sixpence. The contractors, however, on making up their prime cost accounts, discovered that they were heavy losers by their contract. They explained this by pointing to the speed at which the work had been done, leaving no time to make the most economical arrangements with under-contractors and others. Their statement was carefully inquired into, and every voucher examined, and in consideration of the important services they had rendered to the Exhibition by their punctuality in preparing the building, a further sum of thirty-five thousand pounds was paid to them by the Commissioners on the seventh of November, 1851, on their signing an agreement to abide by such terms and conditions as the Commissioners might afterwards prescribe with regard to the verification and settlement of the accounts, and the occupation and sale of the Exhibition building. The ultimate sale of the building to the "Crystal Palace Company" of Sydenham for seventy thousand pounds, about Midsummer, 1852, placed the contractors in a very different financial position. Under their contract they were to receive all money arising from the sale of the building as "old materials," and this was estimated at a little over thirty-three thousand pounds. The receipt of the additional thirty-seven thousand pounds relieved them from all loss, and their accounts with the Commissioners were finally closed in a mutually satisfactory manner.

The division of the space provided by the Exhibition building was a labour which taxed the ingenuity and energy of the Committees and officers. The million of square feet covered by the "Crystal Palace," when the deductions for passages were made, only gave half a million of square feet for the display of goods, besides the vertical space. The whole available space, vertical and horizontal, was divided in two; one-half was given to England and her colonies, and the other half to

foreign countries. No rent was charged for space, and no prices were allowed to be fixed to the goods displayed. The number of exhibitors in the United Kingdom alone demanding space were eight thousand two hundred and thirteen; the horizontal space demanded by them was four hundred and sixteen thousand three hundred and fifty-four square feet, and the vertical space one hundred and ninety-four thousand eight hundred and eighty-six square feet. These demands, as far as the horizontal space was concerned, would have required the whole Palace if they had been complied with; but all the claims were sifted and reduced, and a fair proportion of room was given to each claimant.

The division of the goods was made upon the plan originally laid down by the Prince Consort, and the Exhibition therefore had its four great departments: Raw Materials, subdivided into four classes; Machinery, subdivided into six classes; Manufactures, subdivided into nineteen classes; and Fine Arts, which formed a class by themselves. The British articles occupied the western half of the building, according to a geographical arrangement; and the foreign articles occupied the eastern half. The foreign and colonial divisions were arranged according to their latitudes, the countries lying nearest to the Equator being placed nearest to the transept.

The reception of the goods commenced on the twelfth of February, 1851, and nearly the whole of the British goods were received and completely arranged before the day of the opening. On the foreign side great progress was also made, but some of the packages from abroad did not arrive till a later period. The Custom-house regulations and charges were not enforced against any goods intended for exhibition, and the building was placed upon the footing of a bonded warehouse. The British packages and articles received and unpacked in the building amounted to nearly twenty-one thousand; and the foreign and colonial packages to twelve thousand five hundred and fifty.

Contrary to all popular expectation, the Exhibition was opened by Her Majesty punctually on Thursday the first of May, 1851, with all the advantage of fine weather, state patronage, and the good wishes of everybody, in the presence of twenty-five thousand spectators. The day was kept as a general holiday in London, and the persons who collected outside the building and in the adjoining parks could not have been much less than a million.

The Exhibition remained open one hundred and forty-one days. Its foreign exhibitors numbered six thousand five hundred and fifty-six, and the exhibitors of the United Kingdom and dependencies seven thousand three hundred and eighty-two (exclusive of India), forming a grand total of thirteen thousand nine hundred and thirty-eight. The estimated value of the articles exhibited (excluding the famous Koh-i-noor diamond) was:—

	£	s.	d.
United Kingdom . . .	1,031,607	4	9
Dependencies of ditto . . .	79,901	15	0
Foreign Countries . . .	670,420	11	7
Total . . .	£1,781,929	11	4

The number of prize medals was two thousand nine hundred and eighteen, and of Council Medals, one hundred and seventy, awarded by Juries selected with great care on a representative principle.

The whole daily admissions by payment reached five million two hundred and sixty-five thousand four hundred and twenty-nine, and by season tickets, seven hundred and seventy-three thousand seven hundred and sixty-six;—together six million thirty-nine thousand one hundred and ninety-five. The average number of visitors present on each day appears from these figures to have been forty-two thousand eight hundred and thirty-one. It is not possible to say what proportion of this number consisted of visits paid by distinct individuals, and what of repeated visits by the same persons. The greatest number present on any one day was on Tuesday, the seventh of October, when one hundred and nine thousand nine hundred and fifteen persons were counted by the police. The numbers on the Monday and Wednesday of the same week (the last week of the Exhibition) were very little less, having been one hundred and seven thousand eight hundred and fifteen, and one hundred and nine thousand seven hundred and sixty, respectively. The greatest number of persons present in the building at any one time was ninety-three thousand two hundred and twenty-four, on the seventh of October. The ventilating arrangements had been slightly altered from the original design, but the presence of great crowds seems to have had very little effect upon the temperature of the building.

The gross receipts from daily admissions were three hundred and fifty-six thousand two hundred and seventy-eight pounds three shillings and sevenpence; from season tickets, sixty-seven thousand five hundred and fourteen pounds one shilling;—together, four hundred and twenty-three thousand seven hundred and ninety-two pounds four shillings and sevenpence. The gentlemen's season tickets were three guineas, the ladies' two guineas, not transferable. The admission was one pound each day on the second and third of May, and five shillings from the fifth to the twenty-fourth of May inclusive. On and after the twenty-sixth of May, Mondays, Tuesdays, Wednesdays, and Thursdays were shilling days, Fridays were half-crown days, and Saturdays were five-shilling days. The only alterations made in these rates were a reduction in the price of season tickets to thirty shillings and twenty shillings for gentlemen's and ladies' tickets respectively, and a reduction in the rate of admission on Saturdays to half a crown, both of which changes came into operation at the beginning of August. The Commissioners' receipts from all sources, to the twenty-ninth of February, 1852, including subscriptions, but excluding the loans from the Messrs. Munday and the Bank of England (together fifty-five thousand pounds), were five hundred and six thousand one hundred pounds six shillings and elevenpence. The expenditure between the same dates, excluding the repayment of the above two loans, was two hundred and ninety-two thousand seven hundred and ninety-four pounds eleven shillings and threepence, leaving a balance in the hands of the Commissioners of two hundred and thirteen thousand three hundred and five pounds fifteen shillings and eightpence. The money receipts at the doors exhibit several curious facts. The loss on light gold was two hundred and eighteen pounds four shillings and eightpence. The loss on defaced and foreign coin was two hundred and thirty-one pounds sixteen shillings and tenpence. The spurious coin amounted to twelve bad crowns, two hundred and sixty bad half-crowns, one thousand and thirty-four bad shillings, ninety bad sixpences, and three bad fourpenny pieces;—making a loss under this head of ninety pounds and five shillings, and a total loss of five hundred and forty pounds six shillings and sixpence.

The amount expended by the visitors in refreshments, according to a return furnished by Messrs. Schweppe and Co., the contractors, was seventy-five thousand five hundred and fifty-seven pounds fifteen shillings, giving a general average of about threepence per head. Buns and effervescing drinks—such as soda-water, lemonade, and ginger-beer—seem to have been the chief favourites, if we take numbers instead of quantities or values;—the first having reached a sale of one million eight hundred and four thousand seven hundred and eighteen, the second of one million ninety-two thousand three hundred and thirty-seven, bottles. The consumption of water in and for the building was estimated at from one hundred thousand to two hundred and seventy thousand gallons a day.

The Exhibition was closed to the public on Saturday, the eleventh of October, 1851. The following Monday and Tuesday were set aside for the free admission of exhibitors and their friends; and on Wednesday, the fifteenth of October, the final closing ceremony took place in the presence of the exhibitors, jurors, foreign and local commissioners, and others. After the presentation of the Jury Reports to the Commissioners, the Prince Consort, on behalf of the Commission, took leave of all those who had given their assistance towards conducting the Exhibition to its prosperous issue. The removal of the goods immediately commenced. By the fourteenth of November the British side was cleared, and by the fifteenth of January, 1852, the last straggling foreign exhibitor had disappeared with all that belonged to him.

The special literature and art which sprang out of this display was vast and curious. "Aunt Mavor," and many other imitators, came forward with "alphabets" of the Exhibition. Religious tracts, and sermons improving the occasion, were published in waggon-loads. Catnach issued street-ballads, some sentimental, some comic, and some stated to be "by authority." French dramatists constructed plays showing the adventures of helpless foreigners in England, and their British imitators adapted these productions to our native stage. Projectors, more or less mad, amongst other suggestions proposed that houses in bleak situations should be covered with crystal palaces, to convert them into little Madeiras. Stories and songs about the display were written in various dialects,—in French, German, Italian, Russian, Dutch, Spanish, Portuguese, Swedish, Arabic, Turkish, and a dozen other tongues; and the great Mansion House speech of the Prince Consort (before alluded to) was translated into at least five languages. Engravings of all degrees of merit on every material, from paper to gelatine, appeared in shoals, and musical composers loaded us with various compositions, from airs to symphonies.

No one who looked upon this Exhibition when it was full of life could help feeling that it was a great creation. It was like nothing that had been seen before, but like much that had been dreamed of. The long passages lined with the most precious products of industry,—the rich tapestries hanging from lofty galleries, the hum of voices, the strange faces, the mixed costumes, the perfumes of scented water, the trees springing up in the midst of loaded bazaars, the running fountains, and the light glittering roof bending over all, contributed to form a world such as had only been imagined in Eastern fables. When it had melted away, and the green turf began to grow again in its place, no man living thought to look upon its like again.

PLAN OF KENSINGTON GORE ESTATE.

CHAPTER VII.

THE SURPLUS AND ITS APPLICATION.

THE first steps which the Royal Commissioners took on ascertaining the existence of a surplus, was to apply to Her Majesty for a Supplemental Charter, empowering them to dispose of the money in accordance with the expectations held out to the subscribers at the time their aid was solicited. This Charter was dated the second of December, 1851, and the Commissioners thus describe it: "It (the Charter) gives us the power to dispose of the surplus in the furtherance of any

plans that may be devised by us, to invest it in such manner as we may think fit. . . . It also empowers us to receive contributions in aid of the surplus, and to apply them in the furtherance of our plans; and it gives us power to purchase and hold lands in any part of Her Majesty's dominions, and to dispose of them in all respects as we may think fit." The Commission at once appointed a Surplus Committee from amongst themselves, to make inquiries and prepare a plan of operations, the members of which were: The Prince Consort, Chairman, the Right Hon. Earl Granville, Sir William Cubitt, Sir Charles Lock Eastlake, Sir Charles Lyell, Mr. Thomas Baring, and Mr. Richard Cobden. This Committee held three meetings, and Mr. Bowring acted as its secretary. In the course of 1852 the Commissioners, under the powers of this Supplemental Charter, added to their body Sir A. Y. Spearman, a member of the Finance Committee, Mr. W. Coulson, Q.C., Mr. C. Wentworth Dilke, late a member of the Executive Committee, and Mr. Shepherd, on his ceasing to be an *ex-officio* Commissioner.

After much deliberation, during which the Commissioners seem to have satisfied themselves that many scattered educational institutions ought to be brought together, and that above all a home ought to be provided for the "Trade Museum,"—a collection of articles valued at nine thousand pounds, liberally presented to them by many exhibitors in 1851,—they decided upon purchasing from fifteen to twenty acres of land at South Kensington, which had been pointed out in a parliamentary report as an eligible site for a new National Picture Gallery.

The first estate bought was known as the "Gore House Estate," a spot celebrated as the residence of Mr. Wilberforce, and afterwards of Lady Blessington. It contained about twenty-one acres and a half, was situated at Kensington Gore, nearly opposite the site of the old Exhibition building, and possessed a frontage of between five hundred and six hundred feet. The cost of this estate was sixty thousand pounds. The surplus from the Exhibition of 1851, which the Commissioners were now drawing on, was about one hundred and eighty-six thousand pounds.

After purchasing this ground the Commissioners were anxious to add more to it, and they therefore resolved to lay out one hundred and fifty thousand pounds of the surplus in this way—including what they had already invested—upon the condition that Government would recommend Parliament to join in the purchase to an equal amount. The object of this proposed partnership was to secure a large block of cheap land in London before the spread of building placed it out of their reach, to which some of the overcrowded national exhibitions might be removed if necessary, and on which an educational institution might be erected for the improvement of designing art in connection with manufactures. The Government having pledged themselves to this scheme, the Commissioners bought another estate of forty-eight acres from the trustees of the Baron de Villars for one hundred and fifty-three thousand five hundred pounds.

The promised parliamentary vote of one hundred and fifty thousand pounds towards the South Kensington land purchases of the Royal Commissioners was obtained in the session of 1852-53, and the formal partnership between the Government and the Commissioners then commenced. This union compelled the Commissioners to increase their members, and the following state officers, the Lord President of the Council, the First Lord of the Treasury, the Chancellor of the Exchequer, the President of the Board of Trade, and the First Commissioner of

Works, were added to the Commission. The Right Hon. B. Disraeli and Sir Roderick Murchison were also elected members of the same body.

With a capital of three hundred and forty-two thousand five hundred pounds (one hundred and sixty-five thousand pounds of which were contributed by the Commissioners out of the surplus, while the remainder was supplied by Parliament in two distinct sums) the South Kensington estate was gradually secured. Seventeen acres more land were purchased of the Earl of Harrington, making, with the former purchases, about eighty-six acres—a plot larger by several acres than St. James's Park—and various small changes were effected with adjoining proprietors to render the estate more compact. The cost of the eighty-six acres was two hundred and eighty thousand pounds, or an average of three thousand two hundred and fifty pounds an acre.

As an instance of the cost of making improvements in the metropolis, and to show the comparative cheapness of the land purchased by the Commissioners, it may be well to mention the outlay on some of the more important improvements undertaken of late years. The line of street from Oxford Street to Holborn contained two hundred and twenty thousand one hundred and fifty-one square feet, and its total cost was two hundred and ninety thousand pounds, or an average of more than fifty-seven thousand pounds an acre. The new thoroughfare from Bow Street to Charlotte Street, Bloomsbury, contained sixty-one thousand six hundred and fifty-three square feet, and its total cost was ninety-six thousand pounds, or an average of nearly sixty-eight thousand pounds an acre. Again, the new line from Coventry Street to Long Acre, which contains sixty-five thousand four hundred and ten square feet, cost one hundred and eighty thousand pounds, or an average of nearly one hundred and twenty thousand pounds an acre.

Much of the South Kensington land when the Commissioners bought it was laid out as market-gardens, and the neighbourhood had been famous for nurseries for more than two centuries. The bold speculation was at first looked upon with great distrust, and the obvious joke about sinking money in a cabbage-garden was freely indulged in at the expense of the Commissioners. The sum they were dealing with had many claimants with a supposed title, even after setting aside the government contribution and the pure Exhibition, or "shilling surplus," which no one could own. There was the subscription list of nearly sixty-eight thousand pounds, made up of various sums collected from all parts of the country. Although each contribution was sent in on the clear understanding that it was to be "absolute and definite," many local bodies considered that this part of the surplus ought to have been returned for the direct benefit of local institutions. The original scheme of the Commissioners for a great Central Industrial University would have benefited these local institutions, and particularly the local schools of design. The suggestions sent in to the Commissioners from all sides for the disposal of the whole surplus were very numerous. One correspondent proposed that the Great Exhibition building should be bought and turned into a winter residence for invalids; another proposed that the fund should go to alleviate Irish and Highland destitution; and another that the Exhibition building should be purchased for a great public reading-room. The Commissioners duly registered all the propositions, but followed none of them, and by these means turned disappointed friends into active enemies.

The joke about the "cabbage-garden" would have been very severe, if half

London had not once been a cabbage-garden or a brick-field. Those who made it were ignorant of the laws which govern metropolitan progress, and the Commissioners were soon able to show that their investment was commercially wise. They obtained an Act of Parliament for stopping up certain lanes and by-ways which cut through their property, and they formed nearly two miles of new roadway from eighty to one hundred feet broad, the chief lines of which went round the best part of their estate. These roads were the Cromwell Road, the Exhibition Road, and the Prince Albert Road, forming with the main Kensington Road four sides of a square.

When the Government in 1856 lost its Bill for removing the National Gallery of Pictures from Charing Cross to South Kensington, the Commissioners proposed to dissolve partnership with the State, and this dissolution was effected in the early part of 1858. The sums advanced by the Government were repaid by the Commissioners, subject to a deduction for the ground and buildings of the Department of Science and Art, popularly known as the South Kensington Museum. The connection of the Commissioners with this Department ceased at this point, and they became nothing more than Trustees for the surplus, buying and selling land. They disposed of some outlying parts of their estate—about twelve acres—in building leases on very advantageous terms, for the ground, with the exception of a small corner in the Gore House estate, where the London clay crops up, is red gravel to a depth of more than twenty feet. The new roads, the letting of the upper part of the great centre square—about two-and-twenty acres,—to the Horticultural Society for an Italian exhibition garden, the general improved tone given to the neighbourhood, and the march of time and population have so improved the property, that the Commissioners have now nearly doubled their original capital. Under the arrangement with the Horticultural Society the Commissioners have expended about fifty thousand pounds sterling in the erection of architectural arcades in the new gardens, and the Society have expended an equal amount in terraces, fountains, the great conservatories, and the laying out of the grounds.

CORK EXHIBITION, 1852.

CHAPTER VIII.

INTERMEDIATE EXHIBITIONS.

THE great financial and general success of the Exhibition of 1851 naturally encouraged the repetition of such displays all over the world. Many worthy imitators rose up at short intervals; some being merely local or national displays, others being international. There was the Cork Exhibition in 1852, the daily admissions of which reached seventy-four thousand and ninety-five, the season-ticket admissions fifty-four thousand nine hundred and thirty-six, and the receipts respectively two thousand eight hundred and seventy-four pounds, and one thousand five hundred and forty-five pounds. Two were started simultaneously in 1853; one in New York, and the other in Dublin, both of which were universal exhibitions. The New York Exhibition was a private speculation, and was not a commercial success, owing chiefly to a long delay in the opening caused by the building not being finished. It was visited by a Government appointed Commission of six members—Lord Ellesmere, Sir Charles Lyell, Mr. Wentworth Dilke, Mr. Wallis, Mr. Whitworth, and Professor J. Wilson—whose elaborate reports were laid before Parliament in

DUBLIN EXHIBITION, 1853.

1854. The Dublin Exhibition in the same year, also universal in its design, owed its existence to the patriotic energy of Mr. Dargan, who made himself responsible for the pecuniary part of the undertaking, and paid the losses, which were something considerable, out of his own pocket. This exhibition was very popular with the visitors and the native population, and although it drew so heavily upon its spirited promoter's resources, it showed more visits, compared with the amount of local population, than the Great Exhibition. The population of the metropolis in 1851 was two million three hundred thousand, and the admissions recorded at the Hyde Park building give little more than two and a half visits to each of these individuals. The lowest rate of admission in 1851 was one shilling, but in Dublin it was sixpence. The daily visitors at the latter place reached six hundred and thirty-four thousand five hundred and twenty-three; the season-ticket visitors three hundred and sixty-six thousand seven hundred and forty-five, and the receipts respectively twenty-eight thousand nine hundred and eighty-one pounds, and eighteen thousand three hundred and eighty-two pounds. With the local population of two hundred and fifty-four thousand, this gave nearly four visits to each individual.

The Munich Exhibition of 1854 came next, and it was made the subject of a special report by Consul-General Ward. This display was not International in the broadest sense, though it was not confined to the products of Bavaria. The whole of Germany was allowed to take a part in the competitive struggle.

NEW YORK EXHIBITION, 1853.

The Twelfth Exhibition in Paris followed this, in 1855, being the first great French International Exhibition. It imitated very closely the plan of 1851. The exhibitors, although showing a decrease upon those of 1851 in London, showed a marked increase upon those of the eleventh French Exposition in 1849. The French exhibitors numbered nine thousand seven hundred and ninety, without Algeria, as against four thousand four hundred and ninety-four in 1849, an increase greatly attributable to the admission of international exhibitors. The total number of exhibitors in 1855—national and international—was twenty thousand eight hundred and thirty-nine, more than fifteen hundred of whom were from the United Kingdom, and nearly eleven hundred from the British colonies. The value of the British goods exhibited was estimated at six hundred and ninety-three thousand six hundred and twenty-seven pounds, in addition to the fine arts collection, valued at one hundred and thirty-seven thousand five hundred and sixty pounds. Out of the British exhibitors in the industrial classes, nine hundred and thirty-one received honorary awards from the juries, fifteen obtained the grand medal of honour, thirty-two the medal of honour, three hundred and one the first-class medal, three hundred and fifty-three the second-class medal, and two hundred and thirty honourable mention. The whole British nation, in fact, through its exhibitors, obtained honourable mention—in some cases more than it deserved. One enthusiastic writer in the "*Visite à l'Exposition Universelle*," produced under the direction of M. Tresca, describing the English mechanical models exhibited,

MUNICH EXHIBITION, 1854.

gives us credit for our magnificent Britannia tubular bridge, which was the first to join England to Scotland!

The lowest rate of admission to this French Exhibition was four *sous* (there were many days on which the building was open free), and the total number of visitors between the fifteenth of May, the date of its opening, and the first of December, when it was finally closed to the public, was four million five hundred and thirty-three thousand four hundred and sixty four; more than nine hundred thousand being visitors to the palace of the Fine Arts. Of the whole number, forty thousand were British subjects, including two thousand seven hundred and sixty-eight furnished with workmen's passports free of charge. The total receipts are stated as a little under one hundred and eighteen thousand pounds sterling.

After this great international display came the Manchester Fine Art Exhibition in 1857; a collection of ancient and modern pictures and works of art never before equalled. To furnish it hundreds of cautious collectors gave up their priceless treasures for a time, as they have again given them up in 1862. The daily admissions at this exhibition reached one million fifty-three thousand five hundred and thirty-eight; the season-ticket admissions two hundred and eighty-three thousand one hundred and seventy-seven, and the receipts respectively, sixty thousand five hundred and six pounds, and twenty-three thousand and fourteen pounds.

To make this list complete, though departing for a moment from strict chronological order, we must not forget that partial revival of some of the old City Trade Guilds which has lately given us the exhibitions of the Ironmongers' and Painter-Stainers' Companies. The Society of Arts' displays have of course taken place year after year, and in 1861 we have had the Dublin Art Exhibition, the Edinburgh Art Treasures' Exhibition, and the very hopeful Italian National Exhibition at Florence.

PARIS EXHIBITION, 1855.

CHAPTER IX.

BEGINNING OF THE SECOND GREAT EXHIBITION.

THE doctrine of finality was not regarded by the friends of industrial exhibitions with any more favour when it was applied to their cherished schemes than it was by certain politicians when applied to politics. The Society of Arts always held a belief that the world never stands absolutely still, and that where there is no decay there must be material progress. With an increase of capital comes an increase of population in an equal degree, and this is called the advance of civilization. We may not be more moral, more imaginative, nor better educated than our ancestors, but we have steam, gas, railways, and power-looms, while there are more of us, and we have more money to spend.

This belief sustained the Society of Arts when they first proposed, in the early part of 1858, to repeat the Great Exhibition of 1851. They considered that if such reviews of industry were to be anything beyond a mere show in a gigantic bazaar, they ought to be periodical. In none of the Society's communications on the subject of the first Great International Exhibition, whether to the Royal Com-

missioners, the different manufacturers throughout the country, or the supporters of the scheme in London, was the word "periodical" ever omitted. They never contemplated a single gathering of half the products of the earth under one roof—the creation of an Ark of Industry—which after a six months' life was to be shattered at a blow, and the pieces never collected again. Literary sentimentality and English composition may have invested the display of 1851 with this character, but certainly not the practical minds of its originators, who had before them not only the results of the homely annual displays (before described) at the old rooms in the Adelphi, but the records of what had been done in France since 1797 at average periods of about five years.

The year chosen by the Society of Arts for the second great exhibition was 1861, and during 1858 resolutions and facts favourable to such a repetition were industriously circulated amongst the commercial public. At the close of the same year the Society brought the matter officially under the notice of the Commissioners of 1851, inquiring whether they were willing to undertake the management of the proposed exhibition.

The reply sent to this communication by the Commissioners, asked for further information as to the prospects of such a scheme, and the support it was likely to receive from manufacturers and the public. The Commissioners added that they had no funds to meet the expenses of such an exhibition, but that if the Society's report should be favourable, they were willing to consider how they could most effectively help the undertaking.

The Society of Arts replied to this letter of the Commissioners on the eleventh of March, 1859, stating that they would do all in their power to furnish the required information, and would try to obtain subscriptions to a proposed guarantee fund of two hundred and fifty thousand pounds. They considered that if they succeeded in this last endeavour they should give the best proof of a probability of success. The letter also set forth various reasons why, in the opinion of the Society, the proposed exhibition was likely to produce still more definite and valuable results than the Exhibition of 1851.

The war in Italy, which broke out in the early part of 1859, and threatened to be of long continuance, together with the disturbed state of the Continent, gave little hope that the exhibition, so far as its international character was concerned, could be held with success. The Council of the Society of Arts therefore passed a resolution at the beginning of June, 1859, to put off the proposed exhibition until a more favourable period. This resolution met with the entire concurrence of the Commissioners, and the original proposal was accordingly abandoned.

The Italian war having been unexpectedly brought to an early conclusion, the exhibition project was revived. As it was too late to make the necessary arrangements for holding the exhibition in 1861, the following year was chosen for the display. The Society of Arts forwarded to the Commissioners on the eighth of March, 1860, a copy of a proposed guarantee agreement for securing the means of holding the exhibition, and asked to be informed whether the Commissioners were willing to grant a site on their Kensington Gore estate for the purposes of that and future exhibitions, and if so, on what terms. The following were the principal conditions of the draft guarantee agreement in question:—No subscriber was to be liable unless the deed was signed to the extent of at least two hundred and fifty

MANCHESTER EXHIBITION, 1857.

thousand pounds, and in the event of loss attending the exhibition, each subscriber was to contribute in rateable proportion to his subscription to liquidate such loss. Earl Granville, the Marquis of Chandos, Mr. Thomas Baring, Mr. Dilke, and Mr. Thomas Fairbairn, were to be invited to be the five Trustees of the exhibition. Application was to be made to the Commissioners for a site on the South Kensington estate, and the Trustees were to erect whatever buildings, whether permanent or temporary, they might think necessary for the exhibition, but on the express condition that at least one-third of the sum so expended by them should be employed in erections of a permanent character, suitable for decennial or other exhibitions, and when not so used, suitable for other purposes tending to the encouragement of arts, manufactures, and commerce, such permanent buildings to be vested in the Society of Arts. In the event of there being a surplus, it was to be applied to the encouragement of arts, manufactures, and commerce in such a way as the subscribers might determine upon at a meeting to be called for the purpose. In the event of there being a loss which the Society of Arts declined to liquidate, the permanent buildings above mentioned were to be sold, and if, after such sale, there still remained a deficit, the ultimate loss was to be borne by the subscribers rateably, as already stated.

The facts collected by the Society of Arts in support of this second exhibition came chiefly from Mr. William Hawes, the Registrar-General, Mr. C. M. Willich.

Colonel Owen, and Sir Cusack P. Roney. They showed that the population of Great Britain, which was twenty-five millions one hundred and eighty thousand five hundred and fifty-five in 1851, would be about twenty-nine millions in 1862, and that London then would contain half a million more people than it did at the period of the first Great Exhibition. They showed that one half of this population would consist of persons between the ages of fifteen and fifty, and that one-fourth would consist of persons who were too young to benefit by the Exhibition of 1851. They showed that the length of railways in England alone would be nearly eleven thousand miles in 1862, compared with six thousand seven hundred and fifty-five in 1851, and that the general system of railway management would be much improved. The continental managers have now learned to appreciate through-booking, return-tickets, and excursion traffic at reduced rates, which they would not look at a few years back. Many continental lines have been opened since the year of the Great Exhibition, all more or less converging towards this country, and several others of great importance in shortening existing routes, and putting us in communication with new districts, have been completed during 1859 and 1860. The steam passages between America and Europe have been more than quadrupled, and the fares lowered at least thirty per cent. The chain of railways now joining New York, Boston, Portland, and Quebec, has been tripled since 1851; the distance between London and India has been decreased twenty-five per cent., and between England and Australia fifty per cent.; the time taken for passages to and from our West Indian colonies has been diminished one-third, and we have a well-organized steam communication with South America and Africa, which did not exist in 1851.

Adopting the statements of Mr. Hawes, which were enlarged and repeated in 1861, we were told that "the people are better employed, crime is decreasing, and their social and intellectual condition is improved. Most important discoveries have been made in the preparation of colours for printing and dyeing, producing what are called the 'Aniline' series; great economy has been effected in the manufacture of glass, and a process has just been made perfect for transferring photographs to that material. The manufacture of agricultural implements, and especially the application of steam power to them, has been so improved and extended that it is now a highly important branch of trade.

"Photography, hardly known in 1851, has become an important branch of art and industry, used alike by the artist, the engineer, the architect, and the manufacturer.

"Marine telegraphy, only just accomplished in 1851—the public communication with Dublin having been opened in June, and that with Paris in November, 1852—has now become almost universal, linking together distant countries.

"The electric telegraph has become universal, and in every direction facilities for communication have been increased. We have repealed the duties on soap and paper, the only manufactures the prosperity of which was then thwarted by Excise restrictions.

"We have abolished all taxes on the dissemination of knowledge, and have given increased facilities for the circulation of knowledge by post.

"We have repealed the Import duties, or very nearly so, on raw materials, the produce of foreign countries.

“ We have admitted free of duty, confident in our strength, the manufactures of foreign countries to compete with our own.

“ Old industries have been stimulated and improved. New industries have arisen.

“ In fine art, painting, and sculpture it is hardly possible, except in very extraordinary periods, that a marked change can be observed in a single ten years, but this country certainly holds its own as compared with the productions of other countries.

“ In the manufacture of iron, improvements have also been made ; new bands of ore have been discovered ; and day by day we are economizing its production ; and a metal between iron and steel is now produced at one process, which heretofore required two or more processes alike expensive and difficult.

“ In steam power, especially that applied to railroads and to ocean steam navigation, economical appliances have advanced rapidly.

“ The use of coal for locomotives in place of coke, and super-heating steam and surface-condensing in ocean steamers, tend to increase the power and economize the cost of these powerful engines of civilization.

“ In shipbuilding, the past ten years have produced great changes.

“ Our navy and mercantile marine have alike advanced in scientific construction and in mechanical arrangements. The ocean steamers which were then employed in the postal service included but one of two thousand tons ; now there are many of nearly double that tonnage, with corresponding power and speed—increasing the facilities and decreasing the risk of communication with our colonies and foreign countries.

“ In printing great advances have been made. By the perfection of chromatic printing, views of distant countries, copies of celebrated pictures, most beautifully coloured, have been brought within the reach of almost every class, displacing works which neither improved the taste nor gave useful information ; and by the application of most expensive and most beautiful machinery to the printing of our daily journals, we have been enabled profitably to meet the increased demand caused by the cheapness of our newspapers. Invention and mechanical contrivance have thus kept pace with the requirements of intellect and the daily increasing love of knowledge.”

So energetic were the Society of Arts in putting many of these facts before the public, and in obtaining promises to sign the necessary guarantee deed, that on the eighth of June, 1860, they were able to address another letter to the Commissioners, stating that four hundred and fifty-five persons had already intimated their intention to subscribe sums to the guarantee fund, amounting altogether to three hundred and eight thousand three hundred and fifty pounds. They also informed the Commissioners that the amount which it was intended to invest in the permanent buildings already spoken of was to be at least fifty thousand pounds, and called attention to the liberality with which the Society had surrendered its claim to a share of the surplus profits of the Exhibition of 1851.

“ In reply to this application ” (the Commissioners say in their fourth report) “ we informed the Society of Arts that we should be happy to grant rent free until the thirty-first of December, 1862, for the purposes of the Exhibition of 1862, the use of the whole of the land on the main square of our estate lying on the south

FLORENCE EXHIBITION, 1861.

side of the arcades and entrances to the gardens of the Horticultural Society, estimated at sixteen acres, on the understanding that all the buildings to be erected for the exhibition, whether permanent or temporary in their character, should be subject to our approval, and that all the temporary buildings should be removed within six months after the close of the exhibition if required by us; the Trustees of the exhibition being at liberty, on the other hand, to remove the buildings termed permanent if the exhibition should be attended with pecuniary loss. We further expressed our readiness to grant to the Society, in recognition of their long-continued services in advancing the interests of the arts and manufactures, and especially in preparing the way for the Great Exhibition of 1851, a lease for ninety-nine years at a moderate ground rent of those permanent buildings if retained on our ground, on condition of not less than the sum of fifty thousand pounds, named in the Society's letter of the eighth of June, being expended on them by the Trustees, and of their not covering more than one acre of ground; and also on condition of their being used solely for holding exhibitions and for purposes connected with the promotion of arts and manufactures. With respect to the Society's application, that we should appropriate a portion of our estate for the purpose of future exhibitions analogous to the proposed Exhibition of 1862, we informed them that with the view of meeting their wishes as far as was consistent with our public duty, and at the same time bearing in mind our obligations to our mortgagees, we would undertake, in the event of the pay-

ment to us of the sum of ten thousand pounds out of the profits (if any) of the Exhibition of 1862, to reserve for the purposes of another International Exhibition in 1872, to be conducted by such body as might be approved by us, the remainder of the land now proposed to be lent by us for the Exhibition of 1862 that was not covered by the permanent buildings already referred to, such reservation not interfering in any way with the free use by us of that land in the intervening period."

The Society of Arts accepted these terms, and at once entered into correspondence with the five gentlemen named in the draft guarantee deed as the proposed Trustees of the exhibition, to obtain their definite acceptance of the trust thus offered to them. These gentlemen thought that the offer of management should be made to the Commissioners of 1851, and the Society, therefore, made another application to the Commissioners, asking whether they would undertake the management of the exhibition within the conditions expressed in the guarantee agreement. The Commissioners were unwilling to take the management of the undertaking with the restrictions imposed, even had there not been many legal difficulties in the way of their doing so, but they expressed their general approval of the object which the Society of Arts had in view in organizing the proposed exhibition, and their readiness when the trust was accepted by the five gentlemen named to afford assistance in advising the Trustees on certain important principles and financial points, and to elect as Commissioners those two of the five Trustees—Lord Chandos and Mr. Fairbairn—who were not already members of their body.

Upon this reply being communicated by the Society to the proposed Trustees, those gentlemen announced their willingness to accept the trust in the following letter:—

" London, November 22nd, 1860.

" Sir,

" We have to acknowledge the receipt of your letter of yesterday, enclosing the copy of a communication from Her Majesty's Commissioners for the Exhibition of 1851 to the Council of the Society of Arts, in which the Commissioners express their general approval of the object which the Society has in view in organizing the Exhibition of 1862, and their willingness to render such support and assistance to the undertaking as may be consistent with their position as a chartered body, and with the powers conferred upon them by their Charter of Incorporation.

" Under these circumstances we have to request that you will intimate to the Council of the Society of Arts our willingness to accept the trust which the Council and the Guarantors have in so flattering a manner expressed a wish to repose in us, on the understanding that the Council will forthwith take measures for giving legal effect to the Guarantee, and for obtaining a Charter of Incorporation satisfactory to us.

" We have the honour to be, Sir,

" Your obedient servants,

(Signed) GRANVILLE,

*CHANDOS,

THOMAS BARING,

†C. WENTWORTH DILKE,

THOMAS FAIRBAIRN."

" P. LE NEVE FOSTER, Esq.,
Secretary to the Society of Arts."

* Now the Duke of Buckingham and Chandos,

† Now Sir Charles Wentworth Dilke, Bart.

RAISING THE FIRST RIB.

CHAPTER X.

THE EXHIBITION OF 1862.—ITS ORGANIZATION.

THE earliest act of the Trustees, on accepting office, during the interval required for the preparation of the necessary legal powers, was to obtain a modification of certain conditions made between the Society of Arts and the Commissioners of 1851. In the month of January, 1861, they informed the Council of the Society of Arts, that, with a due regard to the interests of the exhibition, they would not be justified in expending more than twenty thousand pounds on that part of the site intended to be leased to the Society, especially as the average cost per acre of the whole exhibition building was estimated not to reach twelve thousand pounds.

On receiving this information, the Society of Arts requested the Commissioners of 1851 to reconsider the agreement; and the Commissioners consented to accept the new proposition of the Trustees, upon condition that if the necessary surplus should exist at the close of the exhibition, as much money should be laid out in

improving the architectural character of the permanent portion of the building, as would bring the original sum expended up to fifty thousand pounds. "Our reason," the Commissioners say in their fourth report, "for making this stipulation was, that we felt that if we allowed any permanent buildings to be retained on the site, it was important that they should be sufficiently handsome in an architectural point of view, which could not be the case if no larger amount were expended upon them than the limited sum proposed by the Trustees. By the arrangement agreed to by us the retention of the buildings would not disfigure the estate or offer any impediment to the ornamental execution of any future building scheme on the property, which might otherwise be seriously interfered with if so small a sum as that desired by the Trustees were expended on so large an area as that intended to be covered by these buildings.

"It is obvious that the above alteration in the terms originally agreed to between the Society of Arts and ourselves, combined with the alteration which it involved in the stipulations contained in the draft guarantee agreement, was one greatly to the benefit of the subscribers to the guarantee, and greatly tending to lessen the chance of their being eventually called upon to contribute any portion of the sums respectively guaranteed by them. By the original stipulations the Trustees were required to expend *at least* one-third of the total sum expended by them on buildings for the exhibition in the erection of permanent buildings to be leased to the Society of Arts, at the same time that there was no limit whatever upon the amount which the Trustees might choose so to spend. By the altered arrangements, however, the total sum that the Trustees are empowered to expend on the buildings in question, under any circumstances, is a *maximum* of fifty thousand pounds; and even a considerable portion of that sum (that to be expended on the architectural completion of the permanent buildings) is not to be spent in the first instance, but only in the event of the exhibition being successful. The liability of the guarantors was thus, in fact, reduced from an unlimited *minimum* to a limited *maximum*."

While this matter was under discussion, an application was made by the Trustees to the Commissioners, representing that additional space was imperatively required, and applying for the loan of an unoccupied portion of land lying between the western arcades of the Horticultural Gardens and Prince Albert's Road—the same land, in fact, which the Commissioners are prepared to devote, if desired, to the British Museum. The Trustees also applied for the loan of the south arcades of the Horticultural Gardens, to be fitted up as refreshment rooms. Both these requests were complied with; the latter with the liberal consent of the Horticultural Society, but upon the condition, made by the Commissioners as some balance for a sacrifice of rent, that the Trustees should provide a permanent wall and roof to the south arcades, and a permanent wall to the west arcades. The Commissioners felt it to be necessary to make this stipulation, in order to prevent the stability of the arcades being endangered by the manner in which it was proposed to employ them in connection with the exhibition. A subsequent request for more space on the opposite side of the ground—to form another annexe—was also complied with.

Various meetings with the Trustees and their solicitor, and also with the counsel and solicitor of the Bank of England, were attended by the chairman and

secretary of the Society of Arts, to adjust the conditions of the Charter of Incorporation, as well as the Guarantee Deed; and the forms of both instruments having been settled in a satisfactory manner, a petition to the Crown for a Charter was presented by the Society. The Charter, having received the approval of the law officers of the Crown, was sealed on the fourteenth of February, 1861, and under it the five Trustees received their legal title of "The Commissioners for the Exhibition of 1862." The Charter, the Guarantee Deed, and a full list of the Guarantors—the main props of the exhibition—are given in an appendix.

The plans of the Society of Arts having thus received the gracious approval of Her Majesty, the Council transmitted the Charter to the Commissioners for the Exhibition of 1862, and received the following letter from Mr. Sandford, their secretary:—

SIR,

Council Office, Feb. 20, 1861.

I AM directed to acknowledge the receipt of Mr. Foster's letter of the sixteenth of February, enclosing the Charter which has been granted to Earl Granville, K.G., the Marquis of Chandos, Mr. Thomas Baring, M.P., Mr. C. Wentworth Dilke, and Mr. Thomas Fairbairn, incorporating them as The Commissioners for the Exhibition of 1862.

The Commissioners, on the twenty-second of November last, agreed to act, after a guarantee had been promised to such an extent as to show a strong opinion in the public mind that the time for holding a second international exhibition had arrived; after the guarantors had expressed an opinion that the absolute control of the undertaking ought to be intrusted to five gentlemen, named by them; and after the Commissioners of the Exhibition of 1851 had intimated their approval of the project, and their confidence in the proposed mode of management, and had promised their support and assistance. The Commissioners, therefore, gladly accept a Charter which conveys to them Her Majesty's gracious assurance that she is earnestly desirous to promote the holding of an international exhibition of industry and art in the year 1862, and that she is pleased to sanction the proposed arrangements.

The powers conveyed by the Charter will, however, be practically inoperative until the deed of guarantee has been executed. When this has been done, the Bank of England has agreed to advance the necessary loan of money on liberal terms. The Commissioners therefore desire me to request that you will represent to the Council the necessity of having the deed signed as soon as possible.

The Commissioners, unwilling to lose valuable time, have, during the interval required for the preparation of the requisite legal powers, taken such provisional steps as their position permitted.

The most pressing point was the building required for the exhibition. In 1850, notwithstanding the possession of considerable funds, and the assistance of the most eminent architects and engineers, seven months elapsed before a design was adopted. The Commissioners therefore felt that if they postponed the consideration of this subject until they were a legally constituted body, the cost of the building would be greatly increased, and a serious risk incurred of its non-completion by the appointed time.

The arrangements made by the Society of Arts, when negotiating for a site on the estate of the Commissioners of 1851, and their arrangement that the exhibition was to include pictures, a branch of art not exhibited on the former occasion, rendered it necessary to contemplate the erection of a building in some parts of a more substantial character than that of 1851.

A plan was submitted to the Commissioners by Captain Fowke, R.E., who had been employed by Her Majesty's Government, in the British Department of the Paris Exhibition of 1855. This design was adapted to the proposed site, and was intended to meet the practical defects which experience had shown to exist both in the buildings in Hyde Park and in the Champs Elysées. It appeared well adapted for the required purposes, and its principal features were of a striking character, and likely to form an attractive part of the exhibition. The Commissioners submitted the design to the competition of ten eminent contractors, four of whom took out the quantities. Three tenders (one a joint one from two of the contractors invited) were sent in on the day named in the invitation, but all were greatly in excess of the amount which the Commissioners could prudently spend, with a due regard to the interests of the guarantors.

The Commissioners have, therefore, had under their consideration modifications of the plan, which, without destroying its merits, would materially reduce its cost.

The Commissioners having learnt that the French government had applied, on the third of November last, to the Foreign Office, to know whether it was intended to hold an international exhibition in England in 1862, entered into private communication with that government, from whom they have received satisfactory assurances of support, accompanied by a statement that it had been the intention of the Emperor to hold an international exhibition in Paris in 1862, had the project not been entertained in England.

The Commissioners also requested the Duke of Newcastle, the Secretary of State for the Colonies, to announce the design entertained of holding an exhibition, and the intention of the promoters to apply to the Crown for a Charter; and the Commissioners have been informed that his Grace has addressed a communication to that effect to all the governors of Her Majesty's colonies.

The Commissioners have had under their consideration the revision of the rules laid down in 1851, respecting the award of prizes, the constitution of juries, the affixing of prices, the distribution of space, the mode of classification, and also the organization of the additional department of the Fine Arts.

When, therefore, the guarantee deed has been executed, the Commissioners hope to be able to proceed at once with the construction of the buildings, and to announce the rules and regulations for the arrangement of the exhibition.

I have the honour to be, Sir,

Your obedient servant,

F. R. SANDFORD.

To obtain signatures to the Guarantee Deed from persons residing in almost every portion of the kingdom, was no light labour; but the work was undertaken by the officers of the Society of Arts with a degree of energy which insured the early completion of the task, and the Commissioners were enabled, on the fifteenth of March, to publish in the 'London Gazette' a notice that the Guarantee Deed had been signed for two hundred and fifty thousand pounds, which sum it had been arranged should be subscribed before the instrument would become binding on the Guarantors.

Her Majesty's Commissioners, with as little delay as possible, now began their work. In the early part of March, 1861, they took possession of offices in the Strand, and at some of their earliest meetings they arrived at the following

DECISIONS ON POINTS RELATING TO THE EXHIBITION.

1. Her Majesty's Commissioners have fixed upon Thursday the first day of May, 1862, for opening the Exhibition.

2. The Exhibition building will be erected on a site adjoining the gardens of the Royal Horticultural Society, and in the immediate neighbourhood of the ground occupied in 1851, on the occasion of the first international exhibition.

3. The portion of the building to be devoted to the exhibition of pictures will be erected in brick, and will occupy the entire front towards Cromwell Road; the portion in which machinery will be exhibited will extend along Prince Albert's Road, on the west side of the gardens.

4. All works of industry to be exhibited should have been produced since 1850. The decision whether goods proposed to be exhibited are admissible or not, must in each case eventually rest with Her Majesty's Commissioners.

5. Subject to the necessary limitation of space, all persons, whether designers, inventors, manufacturers, or producers of articles, will be allowed to exhibit; but they must state the character in which they do so.

6. Her Majesty's Commissioners will communicate with foreign and colonial exhibitors only through the commission which the government of each foreign country or colony may appoint for that purpose; and no article will be admitted from any foreign country or colony without the sanction of such commission.

7. No rent will be charged to exhibitors.

8. Every article produced or obtained by human industry, whether of

Raw materials,

Machinery,

Manufactures, or

Fine arts,

will be admitted to the exhibition, with the exception of

Living animals and plants,

Fresh vegetable and animal substances liable to spoil by keeping,

Detonating or dangerous substances.

Copper caps, or other articles of a similar nature, may be exhibited, provided the detonating powder be not inserted; also lucifer matches, with imitation tops.

9. Spirits or alcohols, oils, acids, corrosive salts, and substances of a highly inflammable nature, will only be admitted by special written permission, and in well-secured glass vessels.

10. The articles exhibited will be divided into the following classes:—

SECTION I.

Class 1. Mining, quarrying, metallurgy, and mineral products.

„ 2. Chemical substances and products, and pharmaceutical processes.

„ 3. Substances used for food.

„ 4. Animal and vegetable substances used in manufactures.

SECTION II.

- Class 5. Railway plant, including locomotive engines and carriages.
 „ 6. Carriages not connected with rail or tram roads.
 „ 7. Manufacturing machines and tools.
 „ 8. Machinery in general.
 „ 9. Agricultural and horticultural machines and implements.
 „ 10. Civil engineering, architectural, and building contrivances.
 „ 11. Military engineering, armour and accoutrements, ordnance and small arms.
 „ 12. Naval architecture, ships' tackle.
 „ 13. Philosophical instruments, and processes depending upon their use.
 „ 14. Photographic apparatus and photography.
 „ 15. Horological instruments.
 „ 16. Musical instruments.
 „ 17. Surgical instruments and appliances.

SECTION III.

- Class 18. Cotton.
 „ 19. Flax and hemp.
 „ 20. Silk and velvet.
 „ 21. Woollen and worsted, including mixed fabrics generally.
 „ 22. Carpets.
 „ 23. Woven, spun, felted, and laid fabrics, when shown as specimens of printing or dyeing.
 „ 24. Tapestry, lace, and embroidery.
 „ 25. Skins, fur, feathers, and hair.
 „ 26. Leather, including saddlery and harness.
 „ 27. Articles of clothing.
 „ 28. Paper, stationery, printing, and bookbinding.
 „ 29. Educational works and appliances.
 „ 30. Furniture and upholstery, including paper-hangings and papier mâché.
 „ 31. Iron and general hardware.
 „ 32. Steel and cutlery, and edge tools.
 „ 33. Works in precious metals and their imitations, and jewelry.
 „ 34. Glass.
 „ 35. Pottery.
 „ 36. Manufactures not included in previous classes.

SECTION IV.—MODERN FINE ARTS.

(See *Decisions* 111—123.)

- Class 37. Architecture.
 „ 38. Paintings in oil and water colours, and drawings.
 „ 39. Sculpture, models, die-sinking, and intaglios.
 „ 40. Etchings and engravings.

11. Prizes, or rewards for merit, in the form of medals will be given in Sections I., II., III.
 (a.) These medals will be of one class, for merit, without any distinction of degree.
 (b.) No exhibitor will receive more than one medal in any class or sub-class.
 (c.) An international jury will be formed for each class and sub-class of the exhibition, by whom the medals will be adjudged, subject to general rules which will regulate the action of the juries.
 (d.) Each foreign commission will be at liberty to nominate one member of the jury for each class and sub-class, in which staple industries of their country and its dependencies are represented.

Her Majesty's Commissioners have resolved that an industry shall be ranked as a staple one which has twenty exhibitors in a class, or fifteen exhibitors in a sub-class. But Her Majesty's Commissioners will give to each foreign commission the alternative of sending a specified number of jurors, determined by the experience of past exhibitions, and by the relative spaces allotted to the several countries.

Note.—In the nomination, each sub-class is to be considered a separate jury. Should it happen that a foreign commission is not represented by fifteen exhibitors in any of the sub-classes of a general class, the fact that they have an aggregate of twenty exhibitors in the whole class would not entitle them to a juror. The sub-classes will act as separate juries, only to be united for confirmation of awards, and for general purposes of administration.

- (e.) The names of the foreign jurors must be sent to Her Majesty's Commissioners before the tenth of March, 1862; at the same time, the class or sub-class on which each juror is to serve must be specified.

(f.) The British jurors will be chosen in the following manner:

Her Majesty's Commissioners will take steps to secure a certain number of jurors on behalf of India and the colonies; and every exhibitor in the United Kingdom will propose the names of three persons to act on the jury for the class in which he exhibits.

From the persons so named, Her Majesty's Commissioners will select the requisite number of jurors.

(g.) The names of all the jurors will be published in April, 1862.

(h.) The juries will be required to submit their awards, with a brief statement of the grounds of each, to Her Majesty's Commissioners before the fifteenth day of June, 1862.

(i.) The awards will be published in the Exhibition building, at a public ceremony.

(j.) They will immediately afterwards be conspicuously attached to the counters of the successful exhibitors, and the grounds of each award will be very briefly stated.

(k.) If an exhibitor accepts the office of juror, no medal can be awarded in the class or sub-class to which he is appointed, either to himself individually, or to the firm in which he may be a partner.

(l.) The medals will be delivered to the exhibitors on the last day of the exhibition.

12. Prices may be affixed to the articles exhibited in sections I., II., III.

13. Her Majesty's Commissioners will be prepared to receive all articles which may be sent to them on or after Wednesday the twelfth of February, and will continue to receive goods until Monday the thirty-first of March, 1862, inclusive.

14. Articles of great size or weight, the placing of which will require considerable labour, must be sent before Saturday the first of March, 1862; and manufacturers wishing to exhibit machinery or other objects that will require foundations or special constructions, must make a declaration to that effect on their demands for space.

15. Any exhibitor whose goods can properly be placed together will be at liberty to arrange such goods in his own way, provided his arrangement is compatible with the general scheme of the exhibition and the convenience of other exhibitors.

16. Where it is desired to exhibit processes of manufacture, a sufficient number of articles, however dissimilar, will be admitted for the purpose of illustrating the process; but they must not exceed the number actually required. (17-25). [Several numbers were left blank with a view of incorporating future decisions.]

26. Exhibitors will be required to deliver their goods at such part of the building as shall be indicated to them (see Article 153), with the freight, carriage, portorage, and all charges and dues upon them paid.

27. The vans will be unloaded, and the articles and packages taken to the places appointed in the building, by the officers of Her Majesty's Commissioners.

28. Upon receipt of notice from Her Majesty's Commissioners, that the articles are deposited in the building, exhibitors or their representatives, or agents, must themselves unpack, put together, and arrange their goods.

29. Packing-cases must be removed at the cost of the exhibitors or their agents as soon as the goods are examined and deposited in charge of the Commissioners. If not removed within three days of notice being given, they will be disposed of, and the proceeds, if any, applied to the funds of the exhibition.

30. The following regulations have been adopted by the principal railway companies, with the view of affording facilities for the conveyance of goods to and from the Exhibition, and for warehousing packing-cases:—

(a.) The Railway Clearing House classification will be adopted.

(b.) Subject to the owners bearing all risks, the charge for conveyance will be one half the ordinary rates, with an addition of 5s. per ton each way, for the extra delivery to and from the Exhibition—the site of the building being beyond the usual delivery boundary.

(c.) All charges for goods going to the Exhibition must be prepaid, but for the return journey prepayment will be optional.

(d.) No less additional charge for delivery or collection than 6*d.* for a single consignment will be made in addition to the freight.

(e.) On application by exhibitors, empty packages will be warehoused by the railway companies up to the end of 1862, at the following scale of charges, including cartage from and to the Exhibition:—

5s. per package not exceeding 3 feet in its greatest dimensions.

7*s.* 6*d.* " " 4 feet " "

10*s.* " " 5 feet " "

20*s.* " " 8 feet " "

Above that size, Special agreement. (31-34.)

35. No counters or fittings will be provided by Her Majesty's Commissioners. Exhibitors will be permitted, subject only to the necessary general regulations, to erect, according to their own taste, all the counters, stands, glass frames, brackets, awnings, hangings, or similar contrivances which they may consider best calculated for the display of their goods.

36. Exhibitors, or their representatives, should provide whatever light temporary covering may be requisite (such as sheets of oiled calico) to protect their goods from dust; and, in the case of machinery and polished goods, should make the requisite arrangements for keeping the articles free from rust during the time of the exhibition. (37-42.)

43. Exhibitors must be at the charge of insuring their own goods, should they desire this security. Every precaution will be taken to prevent fire, theft, or other losses, and Her Majesty's Commissioners will give all the aid in their power for the legal prosecution of any persons guilty of robbery or wilful injury in the exhibition, but they will not be responsible for losses or damage of any kind which may be occasioned by fire or theft, or in any other manner.

44. Exhibitors may employ assistants (male or female) to keep in order the articles they exhibit, or to explain them to visitors, after obtaining written permission from Her Majesty's Commissioners; but such assistants will be forbidden to invite visitors to purchase the goods of their employers. (45-49.)

50. Articles once deposited in the building will not be permitted to be removed without written permission from Her Majesty's Commissioners. (51-54.)

55. Her Majesty's Commissioners will provide shafting, steam (not exceeding thirty pounds per inch), and water, at high pressure, for machines in motion.

56. Persons who may wish to exhibit machines, or trains of machinery, in motion, will be allowed to have them worked, as far as practicable, under their own superintendence, and by their own men. (57-70.)

70. Intending exhibitors in the United Kingdom are requested to apply without delay to the secretary to Her Majesty's Commissioners, for a *Form of Demand for Space*, stating at the same time in which of the four sections they wish to exhibit.

71. The following is the form which has to be filled up:—

1. Name and Christian name of applicant (or name of firm)
2. Nature of business carried on
3. Address { No. of street or square, &c.
and
Name of Town
4. Nature of articles to be exhibited
5. Number of Class in which they are to be exhibited

		Floor Space.	
		—	
6. Probable space that will
be required for articles
or case in which they
will be shown	{	Length	feet.
		Breadth	feet.
		Height	feet.
		Hanging or Wall Space.	
		—	
	{	Height	feet.
		Width	feet.

100. Foreign and colonial exhibitors should apply to the commission, or other central authority, appointed by the foreign or colonial government, as soon as notice has been given of its appointment.

101. Her Majesty's Commissioners will consider that to be the central authority in each case which is stated to be so by the government of its country, and will only communicate with exhibitors through such central body.

102. No articles of foreign manufacture, to whomsoever they may belong, or wheresoever they may be, can be admitted for exhibition, *except with the sanction of the central authority of the country of which they are the produce*. Her Majesty's Commissioners will communicate to such central authority the amount of space which can be allowed to the productions of the country for which it acts, and will also state the further conditions and limitations which may from time to time be decided on with respect to the admission of articles. All articles forwarded by such central authority will be admitted, provided they do not require a greater aggregate amount of space than that assigned to the country from which they come; and provided also, that they do not violate the general conditions and limitations. It will rest with the central authority in each country to decide upon the merits of the several articles presented for exhibition, and to take care that those which are sent are such as fairly represent the industry of their fellow-countrymen.

103. Separate space will be allotted to each foreign country, within which the commissioners for that country will be at liberty to arrange the productions intrusted to them in such manner as they think best,

subject to the condition that all machinery shall be exhibited in the portion of the building specially devoted to that purpose, and all pictures in the fine art galleries, and to the observance of any general rules that may be laid down by Her Majesty's Commissioners for public convenience.

104. By arrangements made with Her Majesty's Government, all foreign or colonial goods intended for exhibition, sent and addressed in accordance with the regulations laid down by Her Majesty's Commissioners of Customs, as set forth in article 108, will be admitted into the country, and allowed to be transmitted to the Exhibition building without being previously opened, and without payment of any duty. But all goods which shall not be re-exported at the termination of the exhibition will be charged with the proper duties, under the ordinary Customs' regulations.

106. Every article sent separately, and every package, must be legibly marked with the name of the foreign country or colony of which it is the produce or manufacture, and, as far as practicable, with the name of the exhibitor or exhibitors.

107. The following is the form of address which should be adopted :—

<p style="text-align: center;"><i>To the Commissioners for the Exhibition of 1862.</i></p> <p style="text-align: center;">BUILDING, SOUTH KENSINGTON, LONDON.</p> <p style="text-align: center;">From [state Country, and Exhibitor's name.]</p>

To prevent loss, misearriage, or mislaying, articles, or packing-cases containing them, which occupy less bulk than two cubic feet, should not be sent separately ; but packages under such size containing, as far as possible, the same classes of articles, should be transmitted in combination.

108. Her Majesty's Commissioners of Customs have laid down the following regulations upon the importation of goods intended for the Exhibition :—

a. All packages containing goods intended for the International Exhibition of 1862 shall be specially reported as such, and shall be addressed to the Commissioners of the International Exhibition, or to one of their officers, and be consigned to a duly-accredited agent, and shall be accompanied with a specification of their contents and value. They shall be separately entered as intended for the International Exhibition, and the agents in passing their entries shall specify the full contents of the packages, together with the value.

b. Such packages as may be landed in London shall be forwarded unopened to the Exhibition in charge of an approved licensed carman, accompanied by a cart note from the landing officer, giving a description of the packages and the marks and numbers thereon ; and in cases where there may be reason to suppose they contain other goods than those for the Exhibition, they shall also be accompanied by a revenue officer.

c. Packages landed at the outports shall be forwarded with a similar note by railway or other public conveyance, under seals of office, direct to the Exhibition, the officers at the respective ports taking care that the packages bear no private address, and that the documents relating thereto be immediately forwarded to the proper officers of Her Majesty's Customs stationed at the Exhibition.

d. On the arrival of the goods at the Exhibition, no package shall be opened without the knowledge and consent of the officer of Customs, and if the goods be found to agree with the entry or specification, they will, if free, be at once considered as out of charge of the Customs, the entry or declaration being deemed sufficient for all statistical purposes.

e. In the case of all dutiable goods, an account will be taken by the officers of the Crown at the time of the first opening of the packages, but such deficiencies as may occur within the building from any legitimate or unavoidable cause, the officers being fully satisfied thereof, shall not be charged with duty.

f. That the building be considered, for all practical purposes, a "bonded warehouse ;" and that in all cases where dutiable goods shall not be exported, but retained for use in this country, the duty shall be assessed by the officer in charge at the building (and received in the Exhibition by a clerk duly appointed for the purpose), in accordance with the practice now existing in regard to articles found in "passengers' baggage."

g. In the case of dutiable goods for exportation, an entry shall be passed in the long room, and bond given for their due exportation ; and on the receipt of this entry by the officer in charge of the building the goods shall be packed in his presence, and if for shipment at an outport, placed under seal, and forwarded in charge to a railway or other public company ; but if for shipment at London they shall then be sent in charge of Customs officers, at the expense of the exporter, to be delivered into the charge of the searcher of the station from which they are to be shipped, without

further examination, under the regulations applicable to goods shipped direct from the warehouse.

109. It is not the intention of Her Majesty's Commissioners to take any steps in reference to the protection of inventions or designs, by patent or registration, the law on these points having been materially simplified since 1851.

DECISIONS SPECIALLY APPLICABLE TO

SECTION IV.—MODERN FINE ARTS.

Class 37. Architecture.

- „ 38. Paintings in oil and water colours, and drawings.
- „ 39. Sculpture, models, die-sinking, and intaglios.
- „ 40. Engravings and etchings.

110. The object of the exhibition being to illustrate the progress and present condition of *modern art*, each country will decide the period of art which in its own case will best attain that end.

111. The exhibition of British art in this section will include the works of artists alive on or subsequent to the 1st of May, 1762.

112. It is not proposed to award prizes in this section.

113. Prices will be not allowed to be affixed to any work of art exhibited in this section.

114. One half of the space to be allotted to Section IV. will be given to foreign countries, and one half will be reserved for the works of British and colonial artists.

115. The subdivision of the space allotted to foreign countries will be made after consideration of the demands received from the commission, or other central authority, of each foreign country. It is therefore important that these demands should be transmitted to Her Majesty's Commissioners at the earliest possible date.

116. The arrangement of the works of art within the space allotted to each foreign country will be entirely under the control of the accredited representatives of that country, subject only to the necessary general regulations.

117. For the purposes of the catalogue it will be necessary that the central authority of each foreign country should furnish Her Majesty's Commissioners, on or before the 1st of January, 1862, with a description of the several works of art which will be sent for exhibition, specifying in each case the name of the artist, the title of the work, and (when possible) the date of its production.

118. The space at the disposal of Her Majesty's Commissioners for the display of British art being limited, and it being at the same time desirable to bring together as careful and perfect an illustration as possible, a selection of the works to be exhibited will be indispensable.

119. The selection of exhibitors, the space and number of works to be allowed to each, and the arrangement of them, will be intrusted to committees to be nominated by Her Majesty's Commissioners.

120. In the case of living artists, Her Majesty's Commissioners would desire to consult the wishes of the artists themselves as to the particular works by which they would prefer to be represented. The selection of works so made by the artists will not necessarily be binding upon Her Majesty's Commissioners, but in no case will any work by a living artist be exhibited against his wish, if expressed in writing, and delivered to the Commissioners on or before the 31st of March, 1862.

121. Her Majesty's Commissioners will avail themselves of the following eight art institutions of this country in communicating with artists who are members of those institutions :—

- The Royal Academy,
- The Royal Scottish Academy,
- The Royal Hibernian Academy,
- The Society of Painters in Water Colours,
- The Society of British Artists,
- The New Society of Painters in Water Colours,
- The Institute of British Artists,
- The Institute of British Architects.

122. Intending exhibitors in the British division of Section IV., who are not members of any of the preceding institutions, may at once receive forms of demand for space, by applying to the secretary to Her Majesty's Commissioners. These forms must be filled up and returned before the 1st of June, 1861.

ADMISSION OF VISITORS.

123. Her Majesty's Commissioners have adopted the following regulations with respect to the admission of visitors to the Exhibition :—

- (a.) The Exhibition will be open daily (Sundays excepted) during such hours as the Commissioners shall from time to time appoint.

- (b.) The Royal Horticultural Society having arranged a new entrance to their Gardens from Kensington Road, the Commissioners have agreed with the Council of the Society to establish an entrance to the Exhibition from the Gardens, and to issue a joint ticket, giving the owner the privilege of admission both to the Gardens and to the Exhibition on all occasions when they are open to visitors, including the flower shows and fêtes held in the Gardens up to the 18th of October, 1862.
- (c.) There will, therefore, be four principal entrances for visitors :—
- (1.) From the Horticultural Gardens, for the owners of the joint tickets, Fellows of the Society, and other visitors to the Gardens.
 - (2.) In Cromwell Road.
 - (3.) In Prince Albert's Road.
 - (4.) In Exhibition Road.
- (d.) The regulations necessary for preventing obstructions and danger at the several entrances will be issued prior to the opening.
- (e.) Admittance to the Exhibition will be given only to the owners of season tickets, and to visitors paying at the doors.

SEASON TICKETS.

- (f.) There will be two classes of season tickets :—
- The first, price 3*l.* 3*s.*,
will entitle the owner to admission to the opening and all other ceremonies, as well as at all times when the building is open to the public.
- The second, price 5*l.* 5*s.*,
will confer the same privileges of admission to the Exhibition, and will further entitle the owner to admission to the Gardens of the Royal Horticultural Society at South Kensington and Chiswick (including the flower shows and fêtes at these gardens) from the 1st of February to the 18th of October.
- (g.) Season tickets must be signed before presentation. The owners must produce them, and must write their names in a book at the door each time they enter the building or Gardens.
- (h.) Season tickets are not transferable, and if presented by any other persons than the registered owners, will be forfeited, and the names of the offenders will be published. If lost, they will not be replaced.

PRICES OF ADMISSION.

- (i.) On the 1st of May, on the occasion of the opening ceremonial, the admissions will be restricted to the owners of season tickets.
- (j.) On the 2nd and 3rd of May the price of admission will be 4*l.* for each person; and the Commissioners reserve to themselves the power of appointing three other days, when the same charge will be made.
- (k.) From the 5th to the 17th of May, 5*s.*
- (l.) From the 19th to the 31st of May, 2*s.* 6*d.*, except on one day in each week, when the charge will be 5*s.*
- (m.) After the 31st of May the price of admission on four days in each week will be 1*s.*

ADMISSION OF PERSONS AND RECEPTION OF ARTICLES DURING THE ARRANGEMENT OF THE EXHIBITION.

ADMISSION OF PERSONS.

125. No person whatever will be admitted into the building unless he is the bearer of a pass or day ticket.
126. Passes, for the period specified thereon, available only at a particular entrance, and for a particular part of the building, will be issued as follows :—
- To commissioners of colonies and foreign countries, on application to the Secretary to Her Majesty's Commissioners;
 - To Custom-house officers, and their attendants, on application to Her Majesty's Commissioners through the superintendent, British side;
 - To exhibitors, and others not before specified, obtaining a pass available for more than one day for British side;
 - To exhibitors and others, not before specified, obtaining a pass available for more than one day for Foreign side.
127. An exhibitor, British side, desiring a pass must apply for a form to be obtained at the office for passes, at least two days before it is required. The application must be addressed to the superintendent

of the class to which the exhibitor belongs, who will forward it to the superintendent of the British side, with his recommendation attached. If granted, the name will be entered on the registry, and the pass forwarded to the applicant.

128. Passes for workmen in the employ of exhibitors, British side, will be issued, at the discretion of their class superintendent, to exhibitors themselves, on application to him, and superintendents of classes will state in their daily reports any irregularity or misconduct they may observe.

129. No application for a pass will be received from a foreign exhibitor except through the commissioner of his own country.

130. Lists of foreign exhibitors requiring passes, signed by the commissioner of the country to which they belong, will be considered as vouchers, on which the number of passes required will be delivered to such commissioners.

131. Passes for workmen, Foreign side, will be issued on the application of the commissioner of the foreign country requiring their admission.

132. Day tickets will be issued, on application, by the superintendents of the several classes, and by the superintendent of the Foreign side.

133. An exhibitor, British side, requiring a day ticket, will be furnished with it by the superintendent of the class to which he belongs, on application at the building.

134. Applications for passes or day tickets on account of exhibitors from India or the colonies must be addressed to the superintendents of the Indian and colonial departments at the building.

135. An exhibitor, Foreign side, requiring a day ticket, will be furnished with it on application to the superintendent of the Foreign side.

136. Passes and day tickets must be shown on entering and leaving, and whenever demanded, within the building.

137. Passes and day tickets are not transferable; the transfer of a pass or ticket will, on discovery, subject the holder to expulsion from the building, and prevent the person to whom it was originally issued from obtaining another admission.

138. If the possessor of a pass is found in a part of the building beyond the specified limits of his pass, it will be taken from him.

139. All persons holding passes will be considered as agreeing to conform to all regulations from time to time issued.

140. Infraction of rules will be followed by expulsion and forfeiture of pass.

141. If a pass is lost by the owner, he must pay ten shillings before obtaining its renewal.

142. The door-keepers will be held responsible for any person found in the building without a pass.

143. The officer in charge of a class space will be held responsible for the presence of any unauthorized person within it.

144. Every person, not properly authorized, found in the building, or handling or conveying or removing any package or article from one part of the building to another, will be liable to be given into custody.

145. No person will be allowed to carry any bundle or parcel of any size or kind whatever out of the building before it has been opened and examined.

146. All persons using tow or cotton waste must provide slate or metal boxes for containing the refuse.

147. Smoking is strictly forbidden.

148. The introduction of lucifer matches into the building is strictly forbidden.

149. Officers and servants of the Commissioners must attend punctually at the appointed hours, and enter their names in the books provided.

150. Intoxication or disobedience of orders will subject the offender to immediate dismissal.

151. The receipt of fees or payments of any kind by any officers or servants of Her Majesty's Commissioners will subject the receivers to dismissal.

MODE OF PASSING ARTICLES OF THE UNITED KINGDOM INTO THE BUILDING.

152. All articles must be delivered at the building with all charges and dues whatever upon them paid.

153. The entrance for the reception of goods into the building will be as follows:—

No. 1. The entrances to the Eastern Annexe in Exhibition Road for Classes 1, 2, 3, 4, and 9, and part of 5 and 7, marked Door A.

No. 2. The central gates in the Cromwell Road for fine arts and general manufactures, English and foreign, marked Door B (Fine Arts), Door C (General Manufactures).

No. 3. The entrance by Gore Lane for English and foreign machinery, marked Door D.

No. 4. The entrance by the Horticultural Society's Road in Prince Albert's Road for English machinery only, marked Door E.

154. Goods and machinery will be received during such hours only as may from time to time be fixed.

155. No persons but the earmen will be allowed to enter with a waggon; they will not be permitted to leave the waggon while within the building.

156. Every article sent separately, and every package, must be legibly marked with the class number, and the name of the exhibitor or exhibitors, and special labels will be accordingly sent to them.

157. An officer will be appointed to superintend the unloading and transporting of the articles to their respective places, and the following regulations will be observed in the reception and distribution of goods :—

1st. Every package on its delivery into the building to be entered in a register, with the name and address of the sender, the class to which it belongs, and whether received in good condition or damaged.

2nd. A rotation number to be marked distinctly on each package; the same number to be entered against the sender's name in the register.

3rd. All packages to be removed from the landing stage, and deposited in charge of the class superintendents, or their deputies, at places appointed for such purposes, as soon as possible after their reception into the building.

4th. Packages accidentally delivered or received at the wrong door, or from which the name of the exhibitor may have become obliterated, to be deposited in a place set apart for such packages.

5th. In order to facilitate the answering of inquiries, the rotation numbers of all packages received during the day will be entered in a book containing the names of the exhibitors, alphabetically arranged, to be made up every evening.

158. Each class will have a superintendent, a deputy superintendent, and the requisite number of attendants attached to it.

159. The space for each exhibitor will be distinctly marked in the building.

160. Trucks will be numbered for each class, and wheeled off to their respective classes by the officers of the Exhibition.

161. All packing-cases, &c., must be removed by the exhibitors as soon as they receive orders from the Commissioners to do so. Packing-cases not removed within three days after notice will be sold, and the proceeds applied to the funds of the Exhibition.

MODE OF PASSING FOREIGN AND COLONIAL GOODS INTO THE BUILDING.

162. The receipt of all foreign and colonial articles will be subject to the control of the officers of the Customs, and in case any difficulty should arise, application is to be made to the senior Customs officer at the building.

163. The officers of the Customs and their servants will be provided with passes, and will be privileged to enter all portions of the building in which they may have business.

164. All carts and waggons bringing foreign goods will enter the building at Cromwell Road, Door C, excepting machinery, which will enter the machinery department by Gore Lane, Door D.

165. Goods and machinery will be received during such hours only as may from time to time be fixed.

166. All articles and packages must be delivered at the building with all charges and dues whatever paid on them.

167. Every article sent separately, and every package, must be legibly marked with the name of the foreign country or colony of which they are the produce or manufacture, and as far as practicable with the name of the exhibitor or exhibitors.

168. No person but the earmen and the officers of Customs in charge will be allowed to enter the building with a cart or waggon. Neither the earmen nor the officer of Customs in charge will be permitted to quit the waggon whilst in the building.

169. The carts or waggons will be unloaded in rotation by the officers of the Exhibition, when rotation numbers will be affixed to each package by the officers of the Customs.

170. The packages must be produced on arrival to the officer of Customs at the Exhibition, who will see that the Customs number as well as the name of the foreign country, is affixed to each package, which will then be placed on trucks, and conveyed to its destination in the building.

171. The officer in charge of each division will see that the packages belong to that division, that the Customs rotation number is marked thereon, and that the goods are then properly stored within it. When the articles of each country are deposited within the space assigned to them, the commissioner and agents appointed by foreign commissions and colonial committees, or the exhibitors, must themselves unpack, put together, and arrange them. In the case of foreign and colonial productions, as they must be necessarily unpacked for a considerable time before they are finally arranged for exhibition, it is suggested

that the consignees or agents should be authorized to provide proper temporary coverings, such as glazed calico, to protect the articles from dust, &c., and in the case of machinery and polished goods make the requisite arrangements for keeping the articles free from rust.

172. The officers of the Exhibition in charge of each division will cause all packages properly certified as empty to be arranged in places hereafter to be determined upon.

173. All packing-cases, &c., must be removed by exhibitors, or their agents, as soon as they receive notice from Her Majesty's Commissioners to do so.

174. All packing-cases not removed within three days after notice, will be sold, and the proceeds applied to the funds of the Exhibition.

175. Exhibitors intending to introduce foreign articles upon which duty has been paid, with the view of exhibiting them amongst the goods of the country of which they are the produce or manufacture, must have a ticket attached to each with the words "duty paid" thereon; and to prevent difficulty in their delivery at the close of the Exhibition, they should be brought under the notice of the principal officer of Customs at the time they are brought in.

The organization of a working staff followed next, and the formation of the following divisional

COMMITTEES OF ADVICE.

BUILDING COMMITTEE.

EARL OF SHELBURNE.
WILLIAM BAKER, ESQ.

WILLIAM FAIRBAIRN, ESQ., LL.D., F.R.S.

HON. EDWIN B. PORTMAN, *Secretary*.

FINANCE COMMITTEE.

RIGHT HON. R. LOWE, M.P.
SIR A. SPEARMAN, BART.
EDGAR A. BOWRING, ESQ.

T. F. GIBSON, ESQ.
HENRY THRING, ESQ.

LORD FREDERICK CAVENDISH, *Hon. Secretary*.

INDUSTRIAL DEPARTMENT.

GENERAL COMMITTEE ON ORGANIZATION.

MARQUIS OF HARTINGTON, M.P.
LORD STANLEY, M.P.
LORD NAAS, M.P.
LORD STANLEY OF ALDERLEY.
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These committees suggested the appointment of local committees, and the following circular was accordingly drawn up and sent, with a copy of the Charter, to every mayor, provost, and chamber of commerce in the United Kingdom :—

SIR,

I AM directed to inform you that at a meeting of a committee appointed for the purpose of advising Her Majesty's Commissioners as to the arrangements to be made for obtaining an instructive display of the industrial products of the United Kingdom at the approaching exhibition, the following resolutions were adopted, and have been submitted to the consideration of the Commissioners :—

- 1st. That it is the opinion of this Committee that, in order to obtain an adequate representation of the various interests concerned, and to excite local sympathy in the objects of the exhibition, it is expedient that a system of local organization should be adopted in the first instance.
- 2nd. That in the opinion of this Committee it is expedient that all persons desirous of being exhibitors should send in demands for space to Her Majesty's Commissioners, who should refer such demands either to trade committees or local committees, as may seem in each case most expedient.

Her Majesty's Commissioners have accordingly, in the "Decisions," of which I enclose a copy, invited all persons in this country who wish to take part in the exhibition to make early demands for space. These demands have already reached them in very considerable numbers, but no final decision with respect to the organization of the committee to whom they will be referred for consideration can be arrived at till further information is obtained as to the amount of space that will probably be required in each class of the exhibition, the districts from which the demands for space will mainly proceed, and the local organization that will be adopted in those districts.

The assurances which have already been received by Her Majesty's Commissioners from foreign governments, of the interest which is felt abroad in the progress of the undertaking, leave no doubt but that every effort is being made by foreign exhibitors in preparing to take part in the exhibition.

Her Majesty's Commissioners trust that equal zeal will be shown in this country by all classes of the community ; and with a view to the adoption of the local organization declared to be necessary by the first of the resolutions above recited, they desire me to request that you will have the goodness to take such measures as you may deem expedient for the purpose of stimulating local action in your town and neighbourhood, and for encouraging the production of suitable articles for exhibition. If it should appear to you to be advisable that a local committee should be formed, Her Majesty's Commissioners would be glad to learn that this had been done ; the committee being selected with express reference to the various industries of the town and surrounding districts. If such a committee should be formed, it would in the first instance be made the channel of communication with the exhibitors in your district, and the secretary would be furnished from time to time with such information as might be requisite for that purpose.

I have to request that you will inform me of the name and address of the members and secretary of the local committee, if such a committee should be appointed.

I have the honour to be, Sir,

Your obedient servant,

F. R. SANDFORD,

Secretary.

The duties of the local committees were mainly as follows :—

1. To act as the channel of communication between exhibitors and Her Majesty's Commissioners, and to give publicity in their districts to such information as may be useful to intending exhibitors, and others interested in the exhibition.

2. To encourage by every means in their power the production of articles suited for exhibition.

3. To examine the lists of proposed exhibitors, in order to see that they fairly represent the industries of the districts ; and that the principal producers appear in them.

4. To enter into communication with the leading manufacturers who have not sent any demand for space, with the view of urging them to do so at an early date, and to furnish proper forms of application for this purpose, which will be supplied by Her Majesty's Commissioners.

5. To examine the lists of applicants with the view of limiting the demands of those exhibitors who may have formed extravagant ideas of the worth of their goods, and of the space they should occupy.

6. In cases where applicants for space have made demands under more than one class, to ascertain the exact amount of space they will require in each class.

7. At a somewhat later date to superintend, in accordance with such general regulations as may be laid down, the selection or rejection of articles proposed for exhibition, and the allotment of space to such as may be declared admissible.

8. To take such steps as may appear expedient for the purpose of encouraging a desire to visit the exhibition; and for the systematic organization of such visits by all classes of the community.

Circulars were also sent to all the exhibitors who had exhibited in London in 1851, and in Paris in 1855, and the following communications, similar in spirit, were sent to the various governors of our colonies:—

SIR,

WITH reference to the printed "Decisions" of Her Majesty's Commissioners, which have already reached your Excellency through the Secretary of State for the Colonies, I am now instructed to enter into some further explanations for the information of the gentlemen in the colony under your government, who may undertake the duty of forming a collection for the International Exhibition in 1862.

In the first place, it would facilitate the arrangements here if the appointment of the commission or central authority referred to in the "Decisions" were to take place at as early a period as practicable.

Your Excellency will have remarked, that no article will be admitted from the colonies without the sanction of such commission or central authority, and it is important that Her Majesty's Commissioners should know with whom they can officially correspond. Upon this point I am instructed further to observe, that it is highly desirable, in the interests of the colonies, that whoever may be nominated as agent in this country, should be a man of business, well acquainted with the resources of the colony he represents.

The lists of articles admissible are so ample as to include every kind of produce, raw or manufactured, with only the three specified exceptions. With regard to one of these, viz., "fresh vegetables and animal substances liable to spoil by keeping," it seems desirable to explain that the term "fresh" is to be literally interpreted; therefore, articles of export, in whatever manner prepared, so as to keep without undergoing change, will be admissible.

Produce, such as wine, or other articles the result of fermentation, now admissible, although excluded from the Exhibition of 1851, will be submitted to the judgment of a special jury, who will decide upon their respective merits.

In the article of timber, the specimens should in all cases be converted into plank or scantling, of such a size as to show its mercantile value. If possible they should be four inches thick, and cut so as to show the "sap" on both edges. Moreover, since there is great uncertainty as to the origin of much colonial timber, it will be very desirable that each kind of timber should be accompanied by a few twigs, showing its leaves and flowers, when procurable. If the latter are pressed between sheets of paper enclosed in boards, they will furnish the evidence required.

Each colony will have a separate space assigned to it in which to exhibit its products, distinct from that of other colonies. It is, however, the wish of Her Majesty's Commissioners also to classify colonial raw produce, bringing all textile materials, all minerals, and so on, into one general comparative view; and they therefore invite exhibitors to furnish, when practicable, duplicate specimens for that purpose.

Her Majesty's Commissioners not having as yet information as to the number, size, and kind of articles which it is intended to exhibit, are unable at present to assign any fixed amount of space to each colony; but they will be prepared to act with the greatest possible liberality in this respect.

In estimating the probable area which the objects of exhibition may be expected to occupy, it is wished that each colony should mention the superficial area in square feet that its contributions will actually cover; and if wall surface should also be required, then the height and width of the articles for which such space is needed must also be specified. The large number of colonies to be provided for renders the earliest possible information upon this subject indispensable.

Her Majesty's Commissioners desire me to add, that they trust your Excellency will cause the particular attention of intending exhibitors to be drawn to that paragraph in the "Decisions" in which it is announced that the latest period at which goods can be received is March the thirty-first, 1862.

Her Majesty's Commissioners have appointed Dr. Lindley to assist the various colonial committees, if they require any advice from England.

I have the honour to be, Sir,

Your obedient servant,

F. R. SANDFORD,

Secretary.

The foreign exhibitors were stimulated and advised through our Foreign Office, and the following letter from the Commissioners set this machinery in motion :—

Offices, 454 West Strand, London, W.C.
May 18, 1861.

SIR,

I AM directed by Her Majesty's Commissioners for the Exhibition of 1862 to acquaint you, for the information of Lord John Russell, that, having taken into their consideration the question of the amount of space which may be allotted to the productions of each country in the building to be erected for the exhibition, they have decided upon the apportionment detailed in the accompanying schedule, so far as the industrial sections (Sections I., II., III.) of the exhibition are concerned. The amount of space to be allotted to the fine art section (Section IV.) will be the subject of a further communication.

The Commissioners are anxious to ascertain at as early a period as possible the extent to which each country is likely to avail itself of the space placed at its disposal; and I am accordingly directed to request that you will move Lord John Russell to bring under the notice of the governments of the several countries a particular statement of the amount of space allotted to the country to which each respective communication may be addressed, in order that it may be laid by them before the commission, or such other central authority as may be, or has been, appointed for the purpose.

Lord John Russell will perceive that, of the total space, it is intended to reserve one half for the productions of Great Britain and her dependencies, the other half being devoted to the productions of other countries.

The Commissioners are, however, of opinion that it will be advisable, in the various communications which they are now requesting his Lordship to transmit to those countries, that they should be informed that, of the gross space so allotted, about one-half will be required to be given up to passages; and each state should be particularly cautioned that, if it desires to appropriate more space to passage-room than half the gross amount allotted to it, it must find such excess out of its own allotment.

As it will be absolutely necessary to receive timely notice of the extent to which each country will take advantage of the offer thus made to it, Her Majesty's Commissioners conceive that the first of November of this year might be specified as the date by which the various commissions or other central authorities should be requested to give full information on this point.

Whilst it is the intention of the Commissioners to preserve as much as possible the national features of the groups of objects contributed by each country, they propose to adopt the principle of local classification in the building, which was successfully carried out in the Paris Exhibition, and, as a general rule, to keep distinct each section of the exhibition named in their decisions. That is to say, Classes 1 to 4 will be in one division of the building; Classes 5 to 17, relating chiefly to machinery, in a second division; Classes 18 to 36, being manufactures, in a third; whilst Classes 37 to 40, being fine arts, will be in a distinct and special building.

Further, the Commissioners propose with the concurrence of each country, to bring together into international groups, the articles exhibited by each, under the following classes :—No. 15, Photographic apparatus and photography, and No. 29, Educational works and appliances; and to devote to each of these two classes a separate division or apartment in the building.

The Commissioners therefore request that each state will also return, by the first of November, an approximate division of the space which it considers will be occupied by each of the several classes.

They are also anxious that arrangements should be made by which the various descriptions of articles may be packed like only with like, and may be delivered at the building with the Class to which they belong, distinctly marked on such packages.

I have the honour to be, Sir,

Your obedient Servant,

F. R. SANDFORD,

Secretary.

To the Under Secretary of State for Foreign Affairs.

SCHEDULE.

The total amount of space in the building devoted to the exhibition of objects in the first three, or industrial, sections, is eight hundred thousand square feet gross, of which it is proposed to reserve one-half, or four hundred thousand square feet, to Great Britain and her dependencies. The remaining half will be appropriated to foreign countries.

It is understood that such space is available to the extent of one-half for exhibiting purposes, the other half, at least, being reserved for passage-room.

The space mentioned in this schedule, covered and uncovered, has been subsequently increased by the annexes and the galleries to one million two hundred and thirty-one thousand square feet; and the same proportion—one-half—in the industrial section has been reserved for the passages.

The local committees in some cases, instead of observing the rules laid down for their guidance, acted upon the principle of giving each proposing exhibitor a little space, without much reference to his trading position, or the value of the articles which he proposed to exhibit. This was an error which, when discovered, considerably increased the labour of the Commissioners, who had to go through each local list, and arrange the claims for space upon a sounder system.

Without attempting to compete with the first Exhibition, the Commissioners thus decided that works should be selected for their excellence; that they should be arranged in classes, and not according to countries; that music, painting, and photography should be included in the display; and that foreigners should be admitted to contribute on the same conditions as British exhibitors. The Commissioners devoted considerable care to the fine arts department, that being the leading untried feature in connection with English international exhibitions. They decided that the display of the British school of art should be limited to the works of artists living within the century prior to 1862, but that foreigners should have liberty to select their art specimens without any such chronological restriction. In order to insure a full and honourable exhibition under this head, they appealed to art collectors as well as to artists, and took every precaution for the preservation of the pictures intrusted to their care. The selection of works has been made under competent professional advice, and the exceptional course has been adopted of paying all charges for conveyance to and from the building. Sculpture, models, die-sinking, and intaglios, have been included under the head of modern fine arts, as well as architecture, and their selection has been confided to special committees acting on certain rules laid down in the decisions of the Commissioners.

VIEW OF BUILDING FROM THE HORTICULTURAL GARDENS, 1862.

CHAPTER XI.

THE EXHIBITION OF 1862.—ITS WORK AND FEATURES.

NEARLY nine thousand eight hundred and sixty-two applicants sent in claims for space, of whom all but two thousand were in the industrial department.

The work of the Commissioners has been heavy, responsible, and troublesome; although they have not nearly so many official records to show as the managers of the first exhibition. Their letters received in thirteen months have been about forty-four thousand; their letters posted have numbered about eighty-four thousand; but their printed documents have only reached about two hundred and fifty.

Anything which stirs the public mind to the same extent as the present exhibition is sure to produce a host of eccentric proposals, some of them verging on the confines of madness, others displaying, through all their extravagance, a certain calculating selfishness. The first exhibition had a great forcing power in bringing forth these curious proposals and suggestions, but the second exhibition has had a greater.

The first odd communication in writing which the Commissioners received came direct from a lady who concealed her name. She was anxious that the building, even in its earliest stage of erection, should be secured from fire, and she hoped that the Commissioners had not neglected to insure it in some respectable office. She was led to write in this strain, because her sister had recently had a fire at her house, and was not covered by any policy of insurance.

The office of the exhibition had not been open many months before an American gentleman called to make a proposition. He was the fortunate possessor of the embalmed body of Julia Pastrana—a poor creature—half baboon, half woman, who created a sensation in England a few years ago; and he thought that arrangements might be made with the Commissioners to show this dead wonder at sixpence a head.

Another gentleman, not half so worldly-minded, but enthusiastic about the art of flying, wished to exhibit an aerial machine in action under one of the great domes, where he thought he could spring up and down like an acrobat in a gigantic baby-jumper. When his offer was politely declined, he as politely thanked the Commissioners, feeling that their object in refusing him permission to exhibit was only to save him from making a very great personal sacrifice in preparing his machine.

Another scientific exhibitor wished to send “Evidences of one general metallic root,” and the following is his communication on this subject:—

“Hard labour and multiple experiments has proved to me the evidence of one general root metallique. Out of the fundamental principle, and by the developpement of the primitive formations often natural influences interferring, various mixtions are produced, but when the actives and passive agents are settled to a more or less neutral state and a homogene equilibrium of their parts of atomes is constituted, a homogene characteristic individualité is, or can be produced, and a so-called Simple Element is established, this Element, inseparable from his special Character and Individual Unité, cannot be divided further by the ordinary Official Chemical Rule and Methode—from the Bar Metal to the Oxides from the Oxides to the fluide State and again (vice-versa)—but, when higher and most exalted Affinitys produced in a Philosophical Way might be known and applied, then, the homogene Equilibrium of the Individual Unité, affected by a higher affinité then its constituent Atoms posses itself, consequently chemical combinaison will follow on one side, reduction to a more primitive State on the other, and the parts of the so called Unité of the pretended Simple Element returned to the primitive Root.”

One exhibitor had a scheme for showing coffins; another one for showing widows' caps; another one for the display of peculiar wigs; and another one for the exhibition of a patent moustache guard, to protect the monstache from soup while the wearer is dining.

One gentleman—a native of France—of a poetical turn of mind, wished to put the whole official catalogue into flowing verse, and to work up all the minutes, documents, and decisions of the Commissioners into an epic poem.

Another thoughtful friend of the Commissioners sent a number of small physic powders for each member of the staff, all the way from Baden Baden. They were as carefully directed as medicine packets usually are, and were intended to repair the exhausted frames of the over-worked officials.

The smallest contribution which was declined was a penny loaf of the year 1801. The applicant for space to exhibit this loaf, stated that he believed it to be the oldest piece of bread in the world. He had offered it to the Commissioners for the Exhibition of 1851, and he now offered it to the Commissioners for 1862. It was purchased by the applicant's father sixty years ago, when wheat was selling at

a guinea a bushel, and for the purpose of preserving it as a specimen of very dear bread, a string net was made, in which it has been imprisoned ever since.

A project was submitted to the Commissioners for securing the money receipts of the exhibition by a system of astronomical checks based on the signs of the zodiac. The sun's radiations were to do a great deal in keeping the money, and ticket-takers honest; crowning honesty with a glory, and scorching dishonesty with the mark of the beast. The whole scheme was elaborate and confused; and though put forward as a serious business proposition, it read like one of those head-strong allegories written in imitation of John Bunyan.

The demands of the eight thousand industrial would-be exhibitors, if they had been complied with, would have swallowed up seven times the contents of the building, and, therefore, even the most sensitive exhibitor will admit that a little cutting down was necessary. Some of the classes had their demands pared more than others, the Commissioners and the committees being guided in their decisions by the relative importance of different branches of industry. The greatest number of applications was in connection with the class for iron and general hardware; and here one hundred and four claims were rejected. In the class for steel and cutlery there were only one hundred and twenty applications. Glass and pottery produced very few applications, and the number of exhibitors registered under this head is therefore small. There were two hundred and eighty-nine applicants for space to exhibit agricultural implements, and of these about one hundred and fifty were accepted. In mining and metallurgy there were not more than twenty rejections, and the number of exhibitors accepted was about three hundred and sixty. The result of all this winnowing has been that nearly five thousand five hundred British industrial exhibitors have been chosen under the divisions in the following table, to occupy about three hundred and eighty-six thousand and seven hundred square superficial feet of horizontal space, including passages:—

SECTION I.—RAW MATERIALS.						Approximate No. of Exhibitors.	Approximate No. of sq. ft.
Class 1. Mining, quarrying, metallurgy, and mineral products	...	...	...	...	...	360	8,400
„ 2. Chemical substances and products, and pharmaceutical processes	...	...	...	...	...	202	5,100
„ 3. Substances used for food, including wines	...	...	...	...	...	163	4,500
„ 4. Animal and vegetable substances used in manufactures	...	...	...	...	...	247	7,500
						972	25,500
SECTION II.—MACHINERY.							
Class 5. Railway plant, including locomotive engines and carriages	...	...	...	...	...	83	113,532
„ 6. Carriages not connected with rail or tram roads	...	...	...	...	...	116	
„ 7. Manufacturing machines and tools	...	...	...	...	...	241	
„ 8. Machinery in general	...	...	...	...	...	242	
„ 9. Agricultural and horticultural machines and implements	...	...	...	...	...	150	33,800
„ 10. Civil engineering, architectural, and building contrivances	...	...	...	...	...	164	13,962
„ 11. Military engineering, armour and accoutrements, ordnance, and small arms	...	...	...	...	...	130	12,610
„ 12. Naval architecture, ship's tackle	...	...	...	...	...	150	
„ 13. Philosophical instruments and processes depending upon their use	...	...	...	...	...	149	7,625
„ 14. Photography and photographic apparatus	...	...	...	...	...	165	2,966
„ 15. Horological instruments	...	...	...	...	...	130	2,700
„ 16. Musical instruments	...	...	...	...	...	91	5,870
„ 17. Surgical instruments and appliances	...	...	...	...	...	134	2,475
						1,915	195,540
Carried forward	...	...	...	...	...	2,917	221,040

SECTION III.—MANUFACTURES.						Approximate No. of Exhibitors.	Approximate No. of sq. ft.
Brought forward						2,917	221,040
Class 18. Cotton ...	...	...	...	...	...	63	4 684
„ 19. Flax and hemp ...	...	...	...	...	...	81	6,483
„ 20. Silk and velvet ...	...	...	...	...	...	64	4,722
„ 21. Woollen and worsted, including mixed fabrics generally	...	...	...	...	...	235	21,093
„ 22. Carpets	...	...	...	...	...	44	(Vertical space)
„ 23. Wove, spun, felted, and laid fabrics, when shown as specimens of printing or dyeing ...	...	...	...	...	...	51	3,546
„ 24. Tapestry, lace, and embroidery	...	...	...	...	...	85	5,307
„ 25. Skins, fur, feathers, and hair	...	...	...	...	...	68	1,316
„ 26. Leather, including saddlery and harness	...	...	...	...	...	135	4,583
„ 27. Articles of clothing	...	...	...	...	...	201	7,402
„ 28. Paper, stationery, printing, and bookbinding	...	...	...	...	...	223	6,250
„ 29. Educational works and appliances	...	...	...	...	...	234	4,344
„ 30. Furniture and upholstery, including paper-hangings and papier- mâché	...	...	...	...	...	258	25,272
„ 31. Iron and general hardware	...	...	...	...	...	409	25,522
„ 32. Steel and cutlery	...	...	...	...	...	127	13,316
„ 33. Works in precious metals, and their imitations, and jewelry	...	...	...	...	...	84	7,968
„ 34. Glass	...	...	...	...	...	81	15,580
„ 35. Pottery	...	...	...	...	...	62	5,475
„ 36. Manufactures not included in previous classes	...	...	...	...	...	31	2,800
						2,536	165,663
Total						5,453	386,703

It must not be supposed that the rejected contributors bore their rejection very patiently. One gentleman said, that “If Diogenes were alive, he would find abundant use for his lantern in guiding the Commissioners in their search for truth.” Another, more indignant, wrote to say:—“I am determined to exhibit, and shall petition all the Commissioners, even to the Prince of Wales himself, should this application be unsuccessful. If all means fail, I shall inquire through the press—the leading daily and literary journals—for an explanation of the system of preference which dictates refusal to one and the acceptance of another exhibitor.”

In Class one, the department for mining, quarrying, metallurgy, and mineral products—which is under the management of Mr. Robert Hunt, F.R.S.—the commercial motive to exhibit is weaker than in any other class. The transport of the specimens has been costly, and few of the exhibitors can expect any reward except thanks for having contributed to an instructive and interesting collection.

The National Committee for this class drew up a scheme with the view of suggesting, to some extent, the nature of the objects which it was thought desirable should be exhibited in this department of the Exhibition.

The committee suggested the desirability of keeping the size of mineral specimens within moderate limits, as being more convenient for display, and better adapted for exhibiting special peculiarities than unwieldy masses. This did not of course apply to any remarkable examples, such as sections of Lodes, or peculiar and illustrative phenomena. They also recommended that where building stones were exhibited in the form of cubes, the uniform size of eight inches should be preserved, and it was deemed essential that two surfaces of the cube should be left in the natural state—undressed. These and all mineral specimens were to have

labels attached, carefully giving the locality from which they were obtained, and, if possible, the geological formation to which they belong.

The committee desired to see models or drawings of the most approved methods adopted in working our mines and collieries, of the machinery employed for draining, for ventilation, and for winding, and also of the improvements which have been introduced for preparing minerals for the market. They also hoped to see good illustrations of the metallurgical processes employed, and of the commercial results obtained.

The following is the outline plan sent to each exhibitor in this department, and it may be taken to represent the general features of the collection:—

MINING AND QUARRYING OPERATIONS.

DRAWINGS and SECTIONS showing the relations of the Minerals to the rocks in which they occur.

PLANS and SECTIONS and MODELS of the workings of MINES and COLLIERIES.

MODELS, or DRAWINGS, of MACHINERY employed for—

1. VENTILATION.
2. DRAINING.
3. RAISING Minerals.
4. LOWERING and RAISING Miners.
5. STAMPING and CRUSHING Ores.
6. WASHING and DRESSING Ores.

Tools and other Appliances.

GEOLOGICAL and MINERALOGICAL MAPS. PLANS, SECTIONS, or MODELS.

MINERAL PRODUCTS.

Non-Metalliferous Minerals.

COALS and MINERALS used as Fuel.

1. Bituminous Coal.
2. Cannel Coal, and Torbanite.
3. Anthracite.
4. Lignite.
5. Peat.
6. Bituminous Shales.
7. Native Naphtha, Pitch, Bitumen, &c.

The more important commercial varieties are exhibited with chemical analyses, statements of heating power, and physical peculiarities.

CLAYS and FELSPATHIC Minerals:—

1. Porcelain Clay or Kaolin.
2. China Stone.
3. Potters' Clay.
4. Pipe Clay.
5. Brick Clay, and Brick Earth, &c.

BUILDING STONES of all varieties.

SLATES and SLAHS.

PAVING STONES, &c.

SANDS for GLASS-MAKING, &c.

CEMENT STONES and CEMENTS, LIMESTONES, &c.

ROTTEN STONE.

FULLERS' EARTH.

FLUOR SPAR.

BARYTES, STRONTIAN, and other Minerals employed in the Arts.

COPROLITES and other Mineral Manures.

SALT.

GEMS.

STONES used for ornament.

MILLSTONES, GRINDSTONES, HONESTONES, &c.

Metalliferous Minerals.

Some Localities.

IRON:—

MAGNETIC OXIDE

{ Devonshire.
Cornwall.
Ireland, &c.
Yorkshire.

TIN :—

OXIDE	{ Cornwall.
TIN PYRITES	{ Devonshire.

LEAD :—

CARBONATES	{ Cornwall.
SULPHIDES	{ Devonshire.
OTHER VARIETIES USED IN THE ARTS	{ Somerset.
	{ Derbyshire.
	{ Shropshire.
	{ Yorkshire.
	{ Cheshire.
	{ Westmoreland.
	{ Durham.
	{ Northumberland.
	{ Cumberland.
	{ Wales.
	{ Scotland.
	{ Ireland.

SILVER :—

NATIVE	{ Cornwall.
SULPHIDES	{ Devonshire.
CHLORIDES	{ Cornwall.
ARGENTIFEROUS Gossans, &c.	{ Cornwall.

GOLD :—

GOLD QUARTZ	{ Merionethshire.
	{ Cornwall.
	{ Devonshire.

ZINC :—

Carbonate	{ Cumberland.
Silicate	{ Isle of Man.
Sulphide	{ Cardiganshire.
	{ North Wales.
	{ Cornwall.
	{ Devonshire.

SULPHUR ORES :—

Pyrites of Metalliferous veins	{ Cornwall.
Do. of Coal measures—" Coal Brasses "	{ Devonshire.
	{ Cumberland.
	{ Carnarvonshire.
	{ Wicklow, Ireland, &c.

COBALT	{ Cornwall.
	{ Cumberland.

NICKEL	{ Cornwall.
	{ Cumberland.

URANIUM	{ Cornwall.
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TUNGSTEN (Wolfram)	{ Cornwall.
	{ Devonshire, &c.

ARSENIC,

MANGANESE	{ Cornwall.
	{ Devonshire.
	{ Warwickshire.

This large collection is chiefly placed in the eastern annexe—a companion to the show of agricultural implements. The court is largely fitted up with ornamental marbles.

The Lead Hills of Lanarkshire, once the scene of a wild rush after gold, and always a district producing rare materials, have sent a series of their treasures. Lead ores and their products have come from Durham, Northumberland, and Cumberland. The mountain limestone regions of Yorkshire have

furnished lead and copper, and Cardiganshire and Flintshire exhibit varieties of their galenas and blendes. The local committees of Exeter, Tavistock, and Redruth have carefully looked up the more remarkable examples of the minerals of Devonshire and Cornwall. That tin ore which has been worked in Cornwall and on Dartmore for more than two thousand years, and which is now being obtained at the rate of ten thousand tons per annum, is shown as obtained from the stream and from the mine. Several varieties of copper ore, many of rich argentiferous lead ores of the West, the zinc ores of these counties, and sulphur ores (iron pyrites) and many others, not quite so important, but remarkable as being rare, are also amongst the illustrations of Nature's bounty to us. Ireland, too, sends over her lead, copper, and pyritic ores.

Although the Exhibition of 1862 does not exhibit such a complete collection of iron ores as the industry of Mr. S. Blackwell brought together in 1851, yet most of the new discoveries, and they are many and important, find a place. The iron ores of Weardale, those of Cleveland, and the recent discoveries of the West Riding of Yorkshire, the remarkable deposits of Lincolnshire, those of the Midland Counties, and the best examples from Somerset, Devon, and Cornwall, form an interesting series.

Coal specimens are abundant. There is scarcely a useful seam from which an example has not been sent. In 1851 there were some gigantic blocks, many of them of little interest, but cubical pieces of about eighteen inches are now the rule.

The building and ornamental stones of the kingdom are fully represented. The sandstones of the coal measures of the North; the Dolomites of Yorkshire and the neighbouring counties; the Liassic limestones, the Oolites, especially those from the neighbourhood of Bath; Portland stone, Purbeck marble, Stonesfield slate, and numerous other varieties illustrate our richness in constructive materials.

In metallurgy, the examples of iron are numerous, and, at the same time, as nearly all varieties of pig iron are to be found in the Exhibition, there are some of the most remarkable examples of rolled iron that have ever yet been shown. Rails from sixty to upwards of one hundred feet in length, without a weld; bars of remarkable size and length; sheets of iron of most unusual dimensions; and armour plates which have resisted the battering power of Armstrong's guns, are there; with cranks, one weighing above twenty-five tons, and beams of singular size and strength, which prove the capabilities of British forges.

The specimens of gold from Devonshire and Wales will probably be general objects of interest. Two monolithic obelisks, belonging to this department, are erected as trophies in the nave—one made of Cheesewring granite twenty-seven feet high; the other made of gray granite from the Ross of Mull, thirty-five feet high. In the mineral court there are also a beautiful serpentine obelisk, fifteen feet high; a fine collection of Derbyshire marbles, principally black; and a few fluor-spar ornaments, the celebrated fluor-spar being nearly exhausted. One exhibitor has sent a richly inlaid table that may be regarded as a perfect work of art, while other exhibitors have contributed fine examples of Florentine work in British stones.

The only metal exhibited which has become an article of commerce since 1851 is aluminium; and of this there are numerous specimens, both manufactured and unmanufactured. It has a fine white colour, slightly inclining to blue especially

after being well hammered; when cold, like silver, it is susceptible of a very fine matting, is easily burnished or polished or drawn into wire, and can easily be beaten out, either hot or cold, to the same extent, and as perfectly as gold and silver. It is much lighter than ordinary metals: its elasticity and tenacity are about the same as those qualities in silver, and it is easily run into sand and metallic moulds.

Perhaps the most generally interesting objects in the mineral department will be the model of the celebrated Barrow works near Ulverstone, a working model from the Durham mines, set in motion by water power, and other models from the Midland Counties, and from Lancashire, showing every feature of this underground branch of industry.

The chemical and pharmaceutical section of the Exhibition, Class two, can boast of a collection which has never been equalled in variety and excellence. Amongst the exhibitors are over two hundred of the first manufacturers in the country.

Hardly a name of any eminence is missing in any branch of chemical manufacture, from magenta and borax, down to matches and blacking. A complete series of drugs, systematically arranged, has been prepared by a committee of the most eminent members of the Pharmaceutical Society, assisted by Professor Redwood, who is on the National Committee of Class two. This collection is peculiarly instructive and interesting to pharmacists; and its value is greatly enhanced by the Society allowing the specimens to be handled and examined under the supervision of a curator. A very interesting collection of chemicals, illustrating the improvements made in calico-printing and dyeing since 1851, has been formed, at the suggestion of Dr. Lyon Playfair, by Mr. Robert Rumney of Manchester, whose combined knowledge, as a chemist and a manufacturer, rendered him peculiarly fitted for the work. In no department of applied chemistry have such strides been made within the last ten years as in dyeing and calico-printing; and in the history of these useful arts, perhaps no similar period has been so fruitful in good results. A collection of products, illustrating the discovery of the coal-tar dyes formed by the first workman in this fertile field, Mr. W. H. Perkin, is also exhibited: in fact the various dyes are particularly well represented. The coal-tar series is most fully represented, and numerous specimens of the lichen and madder dyes are also exhibited. Altogether the specimens exhibited will tend to show that England has now become the dye-producing nation of Europe, instead of having to depend on Holland, France, and other countries for the supply of lichen and madder dyes wherewith to ornament the produce of her millions of silk, woollen, and cotton looms.

The larger and coarser kind of chemicals, such as alum, soda, copperas, the prussiates, &c., in the manufacture of which this country has always been pre-eminent, are here as a matter of course. Some splendid specimens of salts, in a high state of purity, are exhibited by many well-known firms, and the more delicate materials of absolute purity for laboratory use, show that English manufacturers can compete most satisfactorily with those of the Continent in this respect.

Fine pharmaceutical chemicals, such as the cinchona alkaloids, the opium alkaloids, the valerates, strychnia, &c., receive adequate representation; several collections of the first-named substances being particularly complete. The rarer products of the laboratory, interesting only to the scientific chemist, are well repre-

sented by the numerous specimens exhibited by many eminent scientific men and traders. A collection of raw pigments for the manufacture of artists' colours, including specimens of real ultramarine, valued at more than one thousand pounds, deserves great attention; and the coarser colours for painters' use, including specimens of varnishes and the gums from which they are made, although not so interesting to the casual observer, are nevertheless most complete and valuable. Besides the splendid collection of drugs and pharmaceutical products exhibited by the Pharmaceutical Society, there are many very valuable specimens to be seen in the different cases. A series of products, illustrating the manufacture of starch for laundry use, and a good sprinkling of blacking, matches, manures, vegetable and animal blacks, blue and black-leads, complete this interesting collection.

Class three, consisting of food products, including beverages and tobacco, is well represented by several well-known firms. Many, however, have hung back, fearing that although the general public were well contented to consume these substances in the ordinary way, yet they might not care to see them ranged on counters as specimens for exhibition. The collections of dried fruits, tea, coffee, and cocoas, show that by the exercise of a little taste and judgment these substances can be made as gratifying to the eye and mind as they are to the palate. Although somewhat uninteresting to look at, the specimens of preserved meat are very numerous, and indicate how much the trade in this article has increased of late years. A pig cured whole forms a prominent object in this department. Series of specimens contributed by various exhibitors illustrate the process of sugar-refining in a very complete and interesting manner. Great brewers strive for mastery not only in the quality of their beers, but in the ingenious way they have each adopted for showing this article. Handsome cases of pickles and preserves, and cases of confectionery, form conspicuous objects, round which the younger portion of the visitors to the building will form longing groups. The collections of corn and seeds will afford valuable information to the foreign and colonial agriculturists.

Class four consists of animal and vegetable substances used in manufactures. To commence with animal substances, the large tallow and soap series of products are well represented. These are very important branches of British manufacture, and we have every reason to be proud of the display made. The perfumery stalls, with their tasteful decorations, will form points of attraction for lady visitors, more especially as there are several beautifully designed scent fountains in full play. Further down we come to some exquisite specimens of ivory turning; and the wax-flower show, which exceeds in extent any that has hitherto taken place, will be one of the lions of the Exhibition. Some splendid specimens of woods are shown; gutta percha, india-rubber, and ebonite are exhibited by most of the well-known houses; the fishing-rod and tackle-makers have an excellent display, and some very beautiful specimens of canes and sticks are to be seen in the cases of various exhibitors. The manufacture of combs, although not a large one, is well represented, and the same may be said of glue and gelatine. Fibre manufactures are led by specimens of cocoa-nut matting covered with brilliant patterns that one could hardly have expected from so coarse a material. The walls of this class are covered with some magnificent specimens of veneers of large size, which divide the space with leather-cloth, cocoa-nut matting, and kamptulicon. Some graceful specimens of basket-work will surprise even our French friends, who have carried this manu-

facture to such perfection. In miscellaneous manufactures belonging to this class, we find some fine specimens of sponge, cork, glue, and gelatine, and some interesting applications of gold-beaters' skin. The magnificent collection of fleeces shown by the Royal Agricultural Society cannot fail to attract great attention, and the collection of cottons by the Cotton Supply Association is most valuable and interesting.

These three Classes are under the management of Mr. C. W. Quin, F.C.S.

Classes five, seven, eight, and ten—comprising railway plant, locomotive engines and carriages, manufacturing machines and tools, machinery in general, and civil engineering, architectural and building contrivances—are under the management of Mr. D. K. Clark, C.E. The first three classes, which include machinery in motion and at rest, are exhibited in the western annexe. This department is substantially fitted up to provide steam power, and the means of transport for heavy materials. A single line of railway runs from end to end on each side; six double-flue boilers, thirty feet long by six feet and a half in diameter, are built in at the north end, communicating with a chimney which is seventy-five feet high, and which has a diameter of ten feet at the base. Two hundred elegant iron columns, of the Doric order, have been raised at intervals ten feet apart, and ten feet high above the floor, supporting two thousand feet of shafting, two inches and a half in diameter. Two thousand feet of steam pipe, having a graduated diameter from fifteen to eight inches, are laid down in a bricked subway, or pipe culvert, side by side with two thousand feet of exhaust pipe, eighteen inches in diameter.

In this department many of the very heavy goods were delivered, and were unloaded by two travelling steam cranes capable of lifting five tons each. The steam power supplied here is from four to five hundred horses; and two pumps are placed in this annexe to work the two great French fountains that are exhibited in the Horticultural Gardens. There is also a travelling crane capable of lifting twenty-four tons, in two twelves. The largest steam engines are in the French section, where two are exhibited of sixty horse power each.

Mr. Ashton's ingenious steam winch—like a veteran worker who has earned an honorable place—is also exhibited in this annexe.

Perhaps the greatest novelties in Class five are Ramsbottom's self-feeding tender, to supply water to express engines without stopping, and several smoke-consuming locomotives.

The pile carpet and worsted looms will excite general interest in Class seven (*a*); and in Class seven (*b*) there are many new varieties of steam-hammers, variations upon Mr. J. Nasmyth's original plan. Amongst others is an interesting "steam smith," or radial hammer, exhibited by Messrs. Neilson and Co. of Glasgow.

In Class eight, amongst the marine engines, parts of Messrs. Penn's large engines made for the "Achilles" (a sister ship to the "Warrior"), with a crank shaft weighing seventeen tons, are worthy of special notice. Several important varieties of traction engines are exhibited, made to run on common roads; and the washing and mangling machines will surely not be despised, when we know that the annual washing bill of the United Kingdom is now estimated at six millions sterling.

The following is a classified list of the articles exhibited in this important department, with approximate details of the allotted space:—

MACHINERY DEPARTMENT.

CLASS V.

ALLOTMENTS.

	Superficial Square Feet.
1. Locomotive Engines and Tenders	2,993
2. Ditto Models—Fittings and Pieces	11
3. Railway Carriages and Waggon	999
4. Ditto Carriages—Models	12
5. Ditto Wheels and Axles	318
6. Ditto Carriage and Waggon Fittings and Pieces	62
7. Ditto Brakes	48
8. Permanent Way	600
9. Switches and Crossings	360
10. Weighing Machinery	1,000
11. Road Signals	150
12. Train Signals	40
13. Sundries	493
Total allotments	<u>7,026</u>

CLASS VIIa.

MACHINERY FOR PREPARING, SPINNING, AND WEAVING, COTTON, WOOL, FLAX, SILK, &c.

	Superficial Square Feet.
1. Cotton Spinning	15,249
2. Cotton Looms	1,372
3. Calico and Fancy Looms	136
4. Pieces of Cotton Machinery	46
5. Woollen and Worsted Spinning	253
6. Ditto Ditto Looms	292
7. Pile Carpet and Worsted Looms	350
8. Knitting Machinery	82
9. Flax Spinning	1,198
10. Flax and Jute Weaving	1,760
11. Silk Throwing and Weaving	99
12. Sundry	226
	<u>21,063</u>

CLASS VIIb.

MACHINES AND TOOLS (FOR WOOD AND METAL.)

	Superficial Square Feet.
1. Forging	25
2. Forging-hammers	1,004
3. Machine Tools	7,217
4. Small Tools	240
5. Wood-working Tools	2,417
6. Sundry Cutting-tools	214
7. Drawing and Rolling Mills	120
8. Hand-tools	151
9. Paper-making	2,729
10. Paper-working	360
11. Printing	992
12. Type	348
13. Lithographie Presses	250
14. Stamping, Embossing Presses	84
15. Brick, Tile, and Pipe Machinery	753
16. Bread and Biscuit Machinery	650
17. Confectionery and Grocery Machinery	97
18. Sewing-machines	218
19. Needle-making, Pen-making... ..	136
20. Boot-making, Leather-making	113
21. Sundry	320
	<u>18,381</u>

CLASS VIII.

ALLOTMENTS.

	Superficial Square Feet.
1. Steam-Engines	2,216
2. Ditto ditto Marine	2,003
3. Ditto Boilers	50
4. Engine and Boiler Fittings	516
5. Electro-Magnetic and Air Engines	413
6. Hydraulic Machinery	2,841
7. Fire Engines	127
8. Water Meters	26
9. Air Machinery	110
10. Soda Water and Ice Machines	382
11. Washing and Mangling Machines	310
12. Domestic Machines	22
13. Brewing and Distilling Machinery	411
14. Beer Engines	80
15. Sugar Mills and Machinery	3,190
16. Flour Mills	287
17. Oil, Coffee, and other Mills	580
18. Stone Mills	163
19. Weighing Machines	160
20. Measuring Instruments	45
21. Cranes and Windlasses	690
22. Leather Bands	120
23. Traction Engines for Common Roads	771
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	15,519
	<hr/>

Besides making arrangements for showing machinery in motion, and illustrating it by processes, Her Majesty's Commissioners reserved space for the exhibition of manufacturing processes in certain handicrafts which could be carried on without danger to the building. Invitations were issued to steel-pen makers, pin and needle makers, button makers, medal strikers, gold chain manufacturers, engine turners for watches, type casters, type printers, lithographic and copper-plate printers, earthenware and porcelain printers, potters, brick and drain-tile makers, glass-blowers on a small scale, turners in metal, ivory, and wood; glove makers, and pillow-lace makers of various kinds. Applications to exhibit were not received from all these manufacturers by the date fixed, but the result is that visitors will see illustrations of the following processes:—

Needle making.	Lithographic printing.
Medal striking.	Copper-plate printing.
Gold chain making.	A potter's wheel.
Type casting.	Brick and drain-tile making.
Type printing by hand.	Wood carving.

Class ten in this department includes furnaces, iron and paper pipes, drainage contrivances, baths and other sanitary contrivances, bridges, aqueducts, viaducts, models of docks and harbours, diving apparatus, models of iron buildings, and improved cottage roofs, window-sashes, ornamental building contrivances in marble, granite, slate, and other materials; stones, bricks, cement, tiles, and pipes, including a fine collection of Shropshire ornamental tile-work, contrivances for preserving wood, warehouse machinery, fire-escapes, contrivances for ventilation, smoke-curing, and improved filters and gas-measuring apparatus. Many useful

novelties are exhibited in this department, and amongst the most interesting models are those of the Boyne Viaduct—illustrating the principle of lattice-construction—the great Saltash Viaduct, and Rennie's docks at Cadiz.

The display of agricultural implements in Class nine—which is placed in the long covered and uncovered eastern annexe—is under the management of Mr. Brandreth Gibbs, and is substantially the annual exhibition of the Royal Agri-

WESTERN ANNEXE.

cultural Society. This society has held twenty-three annual exhibitions in different towns from 1839 to 1861 inclusive, and always with a hopeful increase of exhibitors and visitors. Its great display in Hyde Park in 1851 was eminently successful; satisfactory to exhibitors and useful to agriculture. These shows of the society have led to such improvements in the design and manufacture of agricultural implements that a large export trade has been created in this branch of industry, which figures prominently in the government returns.

In horticultural exhibitions a progress even more rapid has been shown. Not only have they led to improvements in the culture of native, and the naturalization of foreign plants, but they have taken botany out of its abstract existence

in books and pictures, and have placed it practically before the eyes of the public, to aid in a useful, beautiful, and what is gradually becoming a necessary part of education. The annual displays at Chiswick have been the creators of the Botanic Gardens in the Regent's Park, and of the Royal Horticultural Society; and the display of fruits and flowers in the gardens of this society, attached to the international building will, doubtless form one of the most attractive features of the Exhibition.

In the agricultural section gardening and farming are jointly represented; and the collection of implements and models includes horticultural buildings, wire netting, fencing, and gardening apparatus.

During the last twenty years great improvements have been made in the construction of agricultural machinery and implements. Before that period a large proportion of the implements of the farm were the production of the village blacksmith; regular implement manufacturers were but few, and the want of railway communication prevented the better class of the machines then made being extensively used beyond the immediate neighbourhood in which they were constructed. Of late years, however, vast strides have been made, and the wants of agriculture are now provided with machinery, which, for its ingenuity and excellence of workmanship, will bear favourable comparison with any other branches of our national industry.

It is unnecessary here to enter into any elaborate description of the various kinds of machinery which are now used as aids to the agriculturist, partly because it would occupy too much valuable space, and secondly, because not only the general character, but the individual merits of the different implements hitherto invented from time to time, during the last twenty years, have been annually recorded in the Reports of the Royal Agricultural Society of England.

The report on Class nine in the Great Exhibition of 1851, written by the late Mr. Pusey, M.P., has brought the history of agricultural machinery down to that period, and it therefore only remains for us now to allude in general terms to some of the principal inventions and improvements that have since appeared.

It was impossible for Her Majesty's Commissioners on the present occasion to set apart more than a limited area for Class nine; the demands of exhibitors had therefore to be cut down to a small fraction of the space they originally applied for, and it was stipulated in granting the allotments, that certain implements specified by the Committee of Selection should be exhibited in each. By this means a tolerably complete collection of agricultural machinery has been secured, but from the frequency of new inventions it was impossible to anticipate what novelties might be forthcoming at the International Exhibition of 1862. It was therefore considered desirable to give the exhibitors the opportunity of placing within their allotments any additional machines they might wish to exhibit.

No doubt the most important introduction since 1851 has been the application of steam to the cultivation of the soil.

It is true that an engine and apparatus were exhibited in the Great Exhibition in Hyde Park, but the practical adaptation of steam power to the cultivation of the soil has taken place since that period, and therefore it claims special notice on this occasion.

There will be found in the building examples of most of the different systems that have lately been before the public, and these will be best understood by an examination of the respective exhibitors' stands which contain in some instances not only the implements themselves, but also models and diagrams illustrating the manner of working them.

The next great improvement has been that of reaping machines for grain crops and mowing machines for natural and artificial grasses. And here again the invention of reaping machines dates back earlier than the year 1851. Long before that period one was known in Scotland, but the attention of manufacturers and agriculturists was first seriously turned to this class of machine when M'Cormick and Hussey contributed one to the Great Exhibition of 1851. Since then various improvements have been made, and probably one of the most important has been that of the "self-delivery." The original machines exhibited by both M'Cormick and Hussey required manual labour to deposit the corn, whereas a large proportion of those now made deliver by mechanical means.

The mowing machines for cutting meadow and other grasses and clover for hay, &c., may be regarded as a natural sequence to the use of reaping machines, and they form an important addition since 1851. Several examples will be found in this class.

We must now allude to the great improvements which have been made in the threshing machines. These do not now simply supersede the old hand flail, but in many cases thresh, winnow, and prepare the grain ready for market, at one operation. They are known as "combined finishing machines." There are others which prepare the grain ready for the last operation, viz., final dressing.

We may also refer to the elevators, for raising corn in the straw, or straw only, to the rick, and they effect a considerable saving of labour.

The straw thatch-weaving machine is also new. It is a modification of the loom, working the straw into a portable covering.

The root-pulpers now in use may be regarded as carrying the operations of the turnip-cutters one step further.

As the above enumerated are the chief new introductions, it will at once be evident that the advancement made in agricultural mechanism is not to be estimated by the number of new kinds of machinery, *i. e.*, machines constructed to carry out some new process, but rather by the comparative perfection to which those already known have been brought.

To subdivide the different classes of machinery, or to enumerate separately all the minor inventions and implements, would far extend the limits assigned to this brief introductory notice; and we therefore merely classify the different specimens comprised in Class nine, under the following general heads:—

I. TILLAGE AND DRAINAGE OF THE SOIL.

Applications of steam-power to the cultivation of the soil.

Ploughs, various, subsoil ditto, pulverizers, &c.

Cultivators, scarifiers, and grubbers.

Clod crushers, land rollers, and Norwegian harrows.

Harrows, ordinary and chain.

Potato diggers.

II. THE CULTURE OF THE SOIL AND HARVESTING OF CROPS.

Drills for sowing corn, seeds, and manures, and dibbling machines.
 Manure distributors for dry and liquid manures.
 Horse-hoes, turnip-thinning machine for thinning the growing plants, weed extirpators, and thistle destroyers.
 Turnip-fly machines for destroying that insect.
 Haymakers or tedding machines.
 Reaping machines.
 Mowing machines, simple and combination with reapers, and combined hedge-clipper.
 Horse-rakes.
 Carts, waggons, farm railways (tramways), stone-collecting cart not requiring manual labour.

III. PREPARATION OF GRAIN FOR MARKET AND OF FOOD FOR CATTLE.

Steam-engines, fixed and portable, and self-propelling.
 Threshing-machines, fixed and portable, including combined finishing.
 Straw elevators, for raising the straw to the stack.
 Winnowing or dressing machines, corn screens, riddles, and separators.
 Smut machines, for removing smut from grain.
 Barley hullers or awellers, for removing the awns off barley.
 Clover drawer, for drawing or threshing the seed from the plant.
 Chaff-cutters and gorse-brisers.
 Mills of sorts for crushing, grinding, &c.
 Oil-cake breakers.
 Horse gear for giving motion to horse threshing and other machines.
 Turnip and root cutters and pulpers, and turnip tailer, for removing roots, &c., off turnips.
 Root-washers.
 Steaming apparatus for cooking food for cattle.

IV. MISCELLANEOUS.

Straw thatch-weaving machines.
 Sack trucks and sack elevators.
 Churns and dairy utensils, cheese press, curd mill.
 Dynamometer for testing the power required to work various machines.
 Cowhouse fittings and feeding cribs.
 Hand tools, drainage ditto, levels.
 Apple mills and cider presses.
 Liquid manure pumps and hydraulic apparatus.
 Gates, fencing, &c.

HORTICULTURAL.

Conservatories, garden-engines, tools, &c.

Classes eleven and twelve—military engineering, armour and accoutrements, ordnance and small arms, and naval architecture and ships' tackle—are under the superintendence of Major Moffatt. In the first of these classes—under Sub-Class *a*—there is a praiseworthy contrivance in the application of the study of the centre of gravity to the suspension of soldiers' belts and ammunition. There are also many specimens of improved cartouch boxes, &c.

Under Sub-Class *b* are exhibited many improvements in tents for field service.

In Sub-Class *c* may be studied an extensive range of every engine of destruction which the human mind has yet devised, from swords to great guns, from the old Brown Bess—more praiseworthy for carrying the queen of British weapons at its muzzle than for its accuracy of aim with the projectile of that date—down to

our death-dealing, repeating weapons, our breech-loading arms, and our long-range rifles.

Amongst the more formidable engines of destruction are the Armstrong and Whitworth one-hundred pounders, Blakeley's five-hundred pounders, and the Mersey Steel Company's six-hundred pounder. As to their respective merits, the visitors must judge for themselves, for the opinions of scientific men on this head are divided.

The trophy of great guns by Mr. Anderson of the Royal Carriage Department will at once attract the close scrutiny of the scientific, being a development of the process of construction of the great Armstrong gun, with a microscopic lens arrangement.

War in all its branches may be studied in an inspection of Colonel Shafto Adair's model of London, with its projected lines of defence for the great city, and also in the model of Fort Torr by Colonel Harness, with Captain Ducane's details of the same fortification. There are other fine models, all deserving minute inspection; not the least interesting is one of the Crimean Monument by Captain Brine, Royal Engineers.

In Class twelve there is a beautiful series of models, lent by the Lords of the Admiralty, illustrative of the progress in the construction of naval architecture from the time of the "Great Harry," 1514, to the iron-clad frigate the "Warrior." There is another large model of the "Warrior," placed in the nave. Next to the "Queen" line-of-battle ship is to be seen a fine model of the "Northumberland," illustrating prospective progress—a splendid iron-cased frigate of that name being now under construction on a larger scale than even the present wonder of the day, the "Warrior." In this class are to be found many new inventions contrived to meet the apparent difficulty of keeping these leviathan ships' heads in the desired direction in rough weather.

The National Life-Boat Institution exhibits some interesting models of boats for improving this humane branch of the naval service.

The Commissioners of the Trinity House, of the Northern Lights, Edinburgh, and of the Ballast Board, Dublin, are exhibiting some very interesting, handsome models of the danger beacons of our isles, many of them originating in the scientific zeal of His late Royal Highness the Prince Consort.

There is also exhibited a splendid model of the American system of boat building by machinery. This is a process by which we can obtain a boat ready for use, of any dimensions, turned out complete from the log of timber at a few hours' notice.

There are models of ships for steam under as well as over the water; gun-boats and floating batteries, penetrable and impenetrable; ships for commerce, and ships for war—in fact, naval architecture with all its appliances may be here studied by the most critical and scientific.

Classes thirteen, twenty-five, and twenty-six are under the superintendence of Mr. C. R. Weld. The first class (philosophical instruments, and the processes depending on their use) comprises all descriptions of philosophical and optical instruments, electric telegraph apparatus, including M. Caselli's pantagraph, which transmits autographic messages, thereby avoiding all risk of error, models of engines, &c. Amongst the exhibitors are all the celebrated makers of instruments, and many

private gentlemen. The great improvements and numerous inventions in electric telegraphy during the past ten years are strikingly shown by the various new instruments exhibited by the Universal Private Telegraph, the British and Irish, the Submarine and other Telegraph Companies. Mr. Wheatstone's ingenious and beautiful domestic telegraphs are shown in working order, and many inventions and contrivances to utilize this valuable discovery are to be seen in this class.

Microscopes, as might be expected, form a prominent feature: the great makers of these important instruments exhibit microscopes of all kinds, from that intended to assist the researches of the most scientific physiologist to the more humble instrument made for the student. Among them are many binocular microscopes, which are rapidly advancing in the estimation of microscopists. The exquisitely adjusted balances and delicate weights are well worthy of minute inspection, and among the optical instruments the excellence of modern glass is particularly deserving of notice. In this class is shown a very interesting series of photographic views of the late total eclipse of the sun as seen in Spain. This class also contributes several trophies to the Exhibition, among the most important of which are several large telescopes and lighthouse lanterns with all the recent improvements.

The Kew Observatory, under the management of a Committee of the British Association for the Advancement of Science, contributes a beautiful series of instruments for the automatic registration of the variations of magnetometers. These instruments present some convenient, but not very important modifications of Mr. Charles Brooke's very ingenious instruments as employed in the Greenwich and Paris observatories.

Class twenty-five (skins, fur, feathers, and hair) is very full and complete, every branch of those special trades being well represented. The central object of attraction in this section will doubtless be the great ostrich-feather trophy, and another smaller trophy of hair work.

Class twenty-six comprises all kinds of undressed and dressed leather, saddlery, harness, and whips; and in this section one firm exhibits a handsome trophy.

The photographic section—Class fourteen—which is under the direction of Mr. P. Le Neve Foster, M.A., divides the space of the central tower with the educational department. It may almost be said to form a new class, for although the Talbotype paper process was shown in 1851, the collodion process was not invented until the middle of that year.

The old difficulty of defining the position of photography has been felt by the Commissioners and the Committee, and the result is that it is allowed to hover over the confines of art, more as an attendant than as a companion.

This department of the Exhibition comprises a large and perfect collection of photographic apparatus and appliances—a great variety of tents and out-door contrivances; with lenses exhibited by Mr. Ross, and some novel lenses sent by Mr. Dallmeyer. Amongst the leading attractions are the art designs photographed in ceramic materials, and burnt in by M. F. Joubert. This gentleman also exhibits several specimens of the same work in which he has succeeded in combining many colours.

Mr. Fox Talbot has sent some specimens of photographic engraving; Sir Henry James some samples of photozincography, or photographs on zinc—a principle now

successfully applied to the printing of the Ordnance maps. Mr. Field exhibits some specimens of photolithography, and Mr. Pouncey of Dorchester has sent some examples of printing in carbon, or photographs which are as permanent as engravings. The difficulty in printing in this style is to get a gradation of tone, and in this M. Joubert with his phototypes has met with considerable success.

Mr. Thurston Thompson and Mr. Caldesi exhibit gigantic photographs of Raffaele's cartoons, which are wonderful examples of the manipulation of large plates. The former gentleman also exhibits several photographs of Turner's pictures.

The most striking objects for general observers will doubtless be the full-length portraits enlarged to the size of life; and of these several exhibitors have sent specimens.

The collection of coloured photographs and miniatures is very fine, and also the portraits of "men of the time." Rejlander's composed pictures—or subjects where a figure is taken from one canvas, a tree from another, and a building from a third, and combined in one high art whole—are very interesting, and show what may be done with photography, either in a serious or a comic vein.

Classes fifteen, twenty-eight, and thirty-eight (*a*), comprising horological instruments, paper, stationery, printing and bookbinding, and art designs for manufactures—the latter illustrative of British art from 1762 to 1862—are under the superintendence of Mr. J. Leighton, F.S.A.

In horology, the greatest novelties are improved designs rather than new movements, though several clocks are exhibited constructed to go more than twelve months. One exhibitor sends an astronomical clock, impelled by gravitation, which requires no oil to the escapement; and another exhibitor has sent a clock which shows the time and longitude at important places. A large number of electro-magnetic clocks are exhibited, with some mercurial time-pieces, some steam or speed clocks, a geographical clock, showing the time throughout the world, and a new balance constructed to resist all extremes of temperature. Under what may be called the fine arts of watchmaking, many manufacturers exhibit some very rich examples of heraldic enamelling and engraving.

In paper are shown many efforts to obtain that important material without the aid of cotton or linen rags—from such substances as straw and other vegetable fibres—while the capabilities of the material are shown in water-pipes made of paper, fancy boxes, stationery, &c.

The Bank of England exhibit their valuable "Notes for the prevention of forgery," and the great seal of England is also exhibited by Mr. Wyon.

Printing and type-founders are represented in great strength. Messrs. Bradbury exhibit their "nature-printing;" a thing quite new in England since 1851; and specimens are also exhibited of the new art of autotypography, the invention of Mr. George Wallis, by which drawings are so executed that they can be engraved direct in a few seconds on a metal plate for printing from at the ordinary copper-plate printing-press. Designs direct from the artist's hand are thus produced, suited to a variety of purposes in fine and industrial art.

In printing processes may also be seen that ingenious toy of the Electro-Block Company by which engravings may be reduced or enlarged to any extent.

In chromo-lithography great progress has been made during the same period in the imitation—almost in the reproduction—of water-colour drawings; and the improvement in steam printing and in wood blocks is almost as great.

The publishers of London show together in a collective case, where may be seen some of the most luxurious volumes produced by the leading houses. The reprint of the first edition of Shakespeare; the Bibles of Bagster and Spottiswoode, are also in this collection.

The specimens of bookbinding, both in hand-tooling and blocking (for which England is unrivalled), are very fine; particularly publishers' bookbinding, which has had the advantage of the best art.

The designs of Mr. John Leighton, the superintendent, are very numerous in this department.

The art designs for manufactures comprise a fine collection of drawings and models in all departments of art industry capable of reproduction. Designs for glass and ceramic wares, precious and other metals, furniture and carving, plastic decorations, and other objects in relief; also designs for textile fabrics, paper-hangings, mural decorations, tiles, mosaics, inlays, stained painted and decorated glass, &c., are freely exhibited, and also a number of original illuminations. The following is a list of the deceased artists, specimens of whose works have in most cases been obtained:—

CHIPTENDALE,	BACON (Sculptor),
CHAMBERS,	GANDY,
ADAMS,	FLAXMAN,
SOANE,	T. HOPE,
JEFFERY WYATT,	HOLLAND,
STOTHARD,	PITTS (Sculptor),
BRIDGENS,	B. WYATT,
TATHAM,	WYON (Sculptor),
PUGIN,	BARRY,
JAMES WYATT,	COTTERILL (Sculptor).

Class sixteen, comprising musical instruments, is under the management of Mr. C. Boosé, and it promises to be as popular in 1862 as it was in 1851.

Grand pianos are exhibited, some remarkable for the beauty of their cases, others for the richness of their tone, and they are well supported by every variety of stringed and wind instruments. An oak piano of the time of Charles the First is shown, and an historical series of pianos, from the old harpsichord—the favourite of our great-grandmothers—down to the improved instrument of the present day. In one part of this collection is a self-blowing harmonium, the wind for which is supplied by clockwork; in another part is a group of Æolian harps, and in another corner is a double bass with a remarkably ingenious apparatus for producing enharmonic scales of harmonics. Many valuable improvements in the mechanism of pianos are exhibited, and the inner machinery of these domestic instruments is shown from the first stage to the last. An oblique piano, with a new action, is a novelty in its way, and also some metal bag-pipes suitable for tropical climates. A new music time-keeper is worthy of notice; also an omnitonic flute,

adjustable at will to any key; and the central object of attraction to listeners rather than to sight-seers is the orchestrion, or self-acting organ, which fairly imitates the melody of a full orchestra.

Class seventeen is devoted to the exhibition of surgical instruments and appliances. In the list of exhibitors in this class will be found the names of nearly all the important instrument makers of England; and the objects exhibited will show how much ingenuity and skill can be exercised in the invention of instruments to aid the surgeon in removing disease and in diminishing suffering and distortion. When the mind has fairly grasped the immense benefit which the surgeon is capable of conferring on his fellow-creatures, it can realize the importance to mankind of such instruments as are exhibited in this class; and the International Exhibition of 1862 will fairly demonstrate how much originality in invention, and how much perfection in manufacture have been reached during the past eleven years. Surgical instruments generally may be subdivided into those used, first, for general surgical purposes, secondly, in ophthalmic surgery, thirdly, in orthopædic surgery, fourthly, in aural surgery, fifthly, dental surgery, and sixthly, in obstetric surgery; so that in all and each of these subdivisions the professional man will find examples of the more important instruments which have been devised for the relief or cure of those diseases and injuries to which the human body is liable.

The superintendence of this class has been given to Mr. Traer, F.R.C.S.; and it may be advisable to state that whereas in 1851 surgical instruments were comprehended under "philosophical instruments," they now worthily form a special class of their own.

The textile division of the Exhibition—comprising Classes eighteen, nineteen, twenty, twenty-one, twenty-two, twenty-three, twenty-four, and twenty-seven—is under the management of Mr. George Wallis.

These classes include cotton, flax and hemp, silk and velvet, woollen, worsted, and mixed fabrics generally; carpets, woven, spun, fitted and laid fabrics shown as specimens of printing and dyeing; tapestry, lace and embroidery, and articles of clothing.

The textile fabrics of the United Kingdom are located in the south-eastern gallery, and thus occupy one-half of the space on the south side of the great nave, the other half being devoted to foreign productions. The arrangements commence with the class for printing and dyeing (Class twenty-three), and in this the productions of Manchester and Glasgow form the leading features, and in combination with the printed table-covers and bandannas of the London houses, constitute the staple of the exhibits, the illustrations of dyeing not being very numerous. Cotton manufactures succeed, and in this class, too, the manufactures of Manchester and Glasgow with the sewing threads of Leicester, Paisley, and Huddersfield, constitute the leading features.

In the cross gallery leading from the gallery next the nave to that along the north wall of the picture gallery, lace, tapestry, and embroidery (Class twenty-four) are placed. Nottingham, London, and Dublin are here effectively represented by a remarkable display of lace goods of all kinds and qualities. The productions of hand lace-workers of Buckinghamshire, Bedfordshire, and Northamptonshire are also located here.

The important class of woollens, worsted, and mixed fabrics (Class twenty) is arranged along the remainder of the gallery next the nave, and continued to the eastern dome, and thence along the cross gallery next the south-eastern transept. The manufactures of the West Riding of Yorkshire, the West of England, and the Metropolis occupy space to the staircase at the side of the dome: Norwich fabrics being placed across the angle of the gallery, and at the back the poplins of Dublin and the shawls of Paisley. Glasgow manufactures in this class are placed next the transept, and the coarser woollens and mixtures of Scotland, together with the blankets and flannels of Rochdale and Witney, and a collection of yarns from various quarters, complete the arrangements of this department.

Class nineteen—linen, flax and hemp manufactures—follows woollens; the coarser fabrics, with cordage, mats, &c., being placed in the remaining portion of the cross gallery, and a portion of the gallery against the north wall of the picture saloons. Here, and on the western side just named, the fine fabrics of linen, damasks, &c., are to be found, finishing with a very extensive display from the north of Ireland.

The silk manufactures of Great Britain have been located against the north wall of the picture gallery; and a complete collective display of nearly every class of silk goods manufactured in London, Macclesfield, and Manchester, together with the ribbons of Coventry and the spun silks and thrown silks of Leek and Derby, forms one of the great features of the textile division.

The class for clothing (Class twenty-seven)—divided into four sub-classes, viz., hats, millinery and artificial flowers, general clothing, and boots and shoes—has been arranged in the extreme angle of the south-eastern transept gallery.

Passing from the flax and hemp manufactures, boots and shoes are placed along the south end of the transept; next to these, gloves and hosiery, and the variety of articles coming under the head of general clothing. Millinery and artificial flowers, and finally, hats and caps, complete the arrangements to the end of the gallery next to the eastern dome.

It may be, perhaps, well to remark here that the most defective parts of the textile division are those of calico printing and cotton manufactures. Neither of the displays convey a fair idea of the extent and importance of these industries; and although every exertion was made consistent with the functions imposed upon Her Majesty's Commissioners, to insure a proper representation in these two branches of our national industry, printers and manufacturers did not move sufficiently in the matter until it was too late, as, according to the early demands in each class, the spaces had to be allotted in the mass at a comparatively early date. This practically excluded many producers who at a later period made proposals to exhibit.

The educational section—Class twenty-nine—has been placed under the superintendence of Mr. J. G. Fitch, M.A., who was from the first a member of the National Committee of Advice. The original scheme which was drawn up by that committee was a very comprehensive one, and although it has not been altogether realized, we think it may be interesting to place it on record here:—

BUILDINGS, FITTINGS, AND FURNITURE.

BUILDINGS. Plans, Sections, Elevations, Drawings, Photographs, and Models of—

Schools :

Infant.
 Primary.
 Secondary.
 Industrial.
 Sunday.
 Adult.
 Trade.
 Art.
 Technical.
 Swimming.
 Riding.

Schools—*cont.*

Fencing, &c.
 Higher.
 Lecture Rooms.
 Institutes.
 Public Libraries.
 Museums.
 Private Studies.
 Dormitories.
 Training Colleges.
 Universities.

FITTINGS AND FURNITURE. Specimens, Models, Drawings, &c. of—

Desks.
 Galleries.
 Forms and seats.
 Black boards and easels.
 Inkstands and wells.
 Tables, Work-tables, &c.

Teachers' and pupil-teachers' desks and boxes.
 Beds and cribs for infants.
 Timepieces.
 Curtains for Schools.
 Cases and Stands for Maps and Diagrams.
 Receptacles for hats, cloaks, &c.

SANITARY ARRANGEMENTS, SPECIALLY SUITED FOR COLLEGES, SCHOOLS, AND INSTITUTES.

Apparatus for heating, lighting, and ventilation.
 Play and exercise grounds.
 Lavatories, &c.

FURNISHED OR FITTED MODELS, and collections of furniture, &c. requisite for schools and other educational institutions.

BOOKS AND INSTRUMENTS OF TEACHING GENERALLY.

READING AND SPELLING.

Books. Primers, reading books, works on elocution, &c.
Tabular Lessons. Alphabets, spelling exercises, &c.
Materials. Boxes of letters, &c.

WRITING.

Books. Manuals for teachers. Copy-books, &c.
Copies and models for imitation. Diagrams of forms and proportions of letters.
Materials. Slates, pencils, pencil-holders. Pens, pen-holders, pen-menders. Ink. Rulers.
Mechanical Expedients for directing the hand or otherwise assisting the pupil in learning to write.

ARITHMETIC.

Books. Theory or practice of arithmetic, mensuration, or book-keeping.
Tabular Lessons. Elementary illustrations of number. Sheet exercises and sums.
Pictorial Illustrations and diagrams of weights and measures; illustrations of the various systems of weights and measures in the United Kingdom.
Mechanical Appliances. Ball-frames, cubes, &c.

RELIGIOUS INSTRUCTION.

Books. Bible manuals. Compendiums of Scripture or ecclesiastical history. Catechisms. Books for Sunday-school use, &c.
Bible Pictures. Illustrations of Eastern life and manners, &c.
Maps, Charts, and Models illustrating the chronology, history, or geography of the Bible.

HISTORY (Secular).

Books. Manuals of ancient or modern history. Biographies. Reading books.
Chronological Charts and diagrams. Systems of mnemonics applied to chronology, &c.
Pictures, in series or singly, exhibiting historical events.

GEOGRAPHY.

Books and Atlases.
Maps, Charts, Models, and Diagrams. Outline maps. Simple projections.
Globes, plain or in relief.
Miscellaneous Appliances. Slate globes, maps in relief, models and pictures of physical phenomena, &c.
National Surveys.

LANGUAGE.

Books. Works on composition, the analysis of sentences. The philosophy and structure of language. Dictionaries and grammars of ancient or modern languages. Editions of classic authors. Courses of reading and instruction.

Tabular Lessons in parsing, etymology, or logical analysis.

MATHEMATICS.

Books. Treatises and exercises on pure or applied mathematics.

Illustrations. Geometrical diagrams; models and drawings for elementary lessons on form and quantity, &c.

Mathematical Instruments. Simple and cheap instruments for school use, singly or in cases. Mariners' compasses. Sextants, theodolites, levelling instruments, &c.

PHYSICAL SCIENCE.

Books. Text books and manuals on astronomy, mechanics, electricity, chemistry, mineralogy, &c.

Drawings and Diagrams illustrating scientific truths.

Models and Apparatus employed in teaching.

Cheap Collections of Objects adapted for chemical, electrical, or other scientific experiments.

NATURAL HISTORY.

Books. Manuals or reading books on botany, zoology, and geology.

Drawings and Pictures. Illustrations of structure, appearance, relative sizes, or local distribution of plants and animals.

Charts and Diagrams to simplify or exhibit systems of classification.

Elementary Collections of natural history.

MUSIC.

Books. Theory or practice of vocal or instrumental music. Exercises.

Compositions. Chants, part songs, school songs, &c.

Diagrams and Tabular Lessons showing scales, systems of musical notation, &c.

Instruments of Instruction. Black boards for music lessons. Tuning-forks, pitch-pipes, metronomes. Cheap musical instruments for schools, juvenile bands, &c.

DRAWING, PAINTING, AND DESIGN.

Books. Handbooks of instruction for teachers, exercises for pupils, &c.

Copies. Drawings and pictures, models, casts, &c.

Materials. Paper, pencils, rubbers, chalks, brushes, easels, colours, canvas, palettes, &c.

Diagrams and Models. Illustrations of theory of perspective, laws of vision, &c.

DOMESTIC ECONOMY.

Books. Text books and reading books, adapted for school use, on needlework, cooking, choice of food, materials for dress, management of a house, &c.

Illustrations. Pictures, diagrams, models, and specimens of household implements, furniture, &c. suitable for educational use.

INDUSTRIAL EDUCATION GENERALLY.

Books. Manuals of gardening, agriculture, or other industrial work done in schools, or other institutions of technical instruction, whether for children or for adults.

Instruments and Illustrations employed therein.

SOCIAL AND ECONOMIC SCIENCE.

Books. Manuals, and reading books, on wages, capital, labour, the conditions of industrial success, &c.

Tabular Lessons or other visible illustrations of such subjects.

PHYSIOLOGY AND THE LAWS OF HEALTH.

Books. Text books, and reading books, on animal physiology, functions of the skin, cleanliness, food, ventilation, respiration, general conditions of health.

Diagrams and Drawings.

Anatomical Models for teaching.

GENERAL KNOWLEDGE.

Books. Text books on common things, the philosophy of every-day life, &c. Lessons on objects Courses of miscellaneous instruction.

Drawings and Diagrams exhibiting the structure and use of familiar things, as a watch, a door-lock, tools and simple machines, weights, lengths, &c.

Models and Specimens used in teaching.

SCHOOL REGISTERS.

Roll-books, registers of attendance, payments, progress, &c. Expedients for facilitating the collection of educational statistics.

TABLETS AND PICTURES FOR WALL USE, including contrivances for rendering schoolrooms cheerful and ornamental.

TEACHING FOR THE BLIND, THE DEAF AND DUMB, IDIOTS, OR OTHERS MENTALLY OR PHYSICALLY DEFICIENT.

Books. Embossed for the blind. Alphabets for the deaf and dumb, &c.

Treatment of defective utterance.

Instruments and Apparatus adapted for these purposes.

SPECIAL AND PROFESSIONAL EDUCATION.

Books. Manuals of military, naval, legal, medical, engineering, or other professional instruction.

Instruments and Apparatus used in such instruction.

THEORY AND PRACTICE OF TEACHING.

Books. Methods and systems of teaching. Model lessons. Teachers' manuals. Courses of pedagogy. Schemes of examinations. Histories of education. Reports, &c., of Committee of Council on Education, Boards, and societies of education. Statistics of education, histories, reports and regulations of public libraries, book-hawking societies for promoting the sale of pure literature, literary and scientific societies, institutes, &c.

LIBRARIES.

Collections, lists, or specimens of books adapted for school libraries, either by their cheapness, or by arrangement or classification.

APPLIANCES FOR PHYSICAL EDUCATION.—TOYS AND GAMES.

MANUALS OF DRILL, military, naval, or general, for boys, girls, or adults. Exercise books, &c., for the use of teachers.

GYMNASTIC APPARATUS.

For Playgrounds. Specimens, models, and diagrams of swings, poles, parallel bars, inclined planes, &c.

For Indoor Use. Dumb-bells, chest expanders, &c.

APPARATUS EMPLOYED IN INFANT SCHOOLS.

Articles used in *Kinder-Garten* occupations.

Models, puzzles, and expedients for educating the eye or hand.

Specimens of the commoner tools used by workmen, as smiths, carpenters, gardeners, &c., and models of articles of household furniture generally.

Picture books and cards.

Instructive games and toys.

MATERIALS USED IN, AND PHOTOGRAPHS AND PICTURES, illustrative of national and other games and exercises of strength or agility.

Miscellaneous toys and games.

SPECIMENS OF SCHOOL-WORK.

WRITING, plain, ornamental, or illuminated.

DRAWING AND DESIGN, plain and coloured drawings from maps, copies, models, nature, memory.

Modelling in clay, wax, &c. Cutting out paper, from copies or invention.

NEEDLEWORK.

Ordinary. Sewing, knitting, darning, &c.

Artistic. Embroidery, lace-work, worsted-work, &c. Specimens of dressed dolls, &c.

INDUSTRIAL WORK GENERALLY.

Basket Work, Artificial Flowers, Matting, &c.

Floral and other *decorative* work for school fêtes, &c.

MUSEUMS.

MUSEUMS.

National.

Local.

Trade.

Itinerating.

Classified collections, of small cost, for educational use, to illustrate common objects, specific sciences or studies, or particular book or courses of instruction.

Special floras or faunas, &c.

TAXIDERMY.

Methods of mounting, labelling, and preserving objects from dust, insects, &c.

Specimens.

The plan here sketched represents the conception formed by the National Committee of a possible educational collection on an extensive scale. It was prepared on the assumption that the court would be an international one, and that means could be taken for bringing into comparison illustrations of the methods and processes of teaching from all parts of the world. The committee also hoped that a very large space would be at their disposal, and therefore sought to make their list as nearly as possible an exhaustive one; but the event has not justified these anticipations. A strong wish was expressed on the part of the foreign commissioners to keep all educational contributions in the courts devoted to the several countries; and the idea of an international exhibition in this department was therefore abandoned. Moreover, the space allotted by the Commissioners to the Education Committee necessarily amounted only to one-fifteenth part of the total area demanded by British exhibitors alone. In these circumstances it became necessary to sacrifice much of the unity and symmetry of the original plan. For example, it was very early determined by the committee that results or specimens of school-work were altogether inadmissible, since in so small a space it was simply impossible to represent the work done in different classes of schools with even approximate fairness. In the department of school-buildings it is to be regretted that so few models are to be found illustrative of the great improvements which have taken place recently in the structure, fitting, and internal arrangement of elementary schools.

Nevertheless the collection, though somewhat heterogeneous, contains some noteworthy objects. One recess on the north side of the room is devoted to the exhibition of a collection of the most recent text-books and manuals employed in teaching. Another contains—besides many miscellaneous articles of school furniture—an interesting collection of models illustrative of the system pursued in Reformatory schools, and a beautiful model of one of the school-houses on the Philanthropic Society's farm at Redhill. In the adjacent bay, which is wholly occupied by materials and models employed in teaching drawing, the Department of Science and Art exhibits a complete series of the copies employed in the instruction of pupils in the Government Schools of Design.

The small court in the north-east corner of the educational department is entirely devoted to the illustration of methods employed in teaching the Blind. Here will be found specimens of all kinds of embossed or raised type, of writing and ciphering frames, of musical notation, and of maps in relief. A very beautiful embossed globe used in the School for the Indigent Blind adorns the centre of this recess, while specimens of the work done in various Blind asylums are displayed on the walls and on the screens. In the arrangement of the articles in this division, the superintendent has had the advantage of the assistance of Viscount Cranborne, Mr. Edmund C. Johnson, and the Rev. B. G. Johns, Chaplain of the Blind Asylum, who have taken great interest in the selection of the articles, and to whom all the credit of the arrangement is due.

On the south side of the room, the principal education societies—the National, the British and Foreign, the Home and Colonial, the Christian Knowledge societies, and others—exhibit specimens of the articles employed in fitting up schools or in elementary teaching generally. A very beautiful collection of models of school fittings, executed in miniature, and exhibited by the National Society,

deserves especial notice. The Home and Colonial School Society also displays an interesting series of articles used in the "Kinder Garten" system, which has been so successfully adopted by that society in its infant schools. Mr. Myers's collection of pictures and other objects adapted for use in the nursery and in the schoolroom, is especially worthy of attention.

Of the apparatus employed in teaching elementary science the collection of globes, the orrery, and several other collections, will probably attract the eye of the visitor first; but the scientific collection, the curious case of small birds, on the staircase, and the very systematic and beautiful geological collections will be found, on close examination, to possess great interest and merit. The large cases of stuffed birds, though not specially educational in their character, are remarkable evidences of the perfection which the art of taxidermy has reached in England.

Some surprise has been expressed that toys should have a place in the educational court. Perhaps we shall be less disposed to question the wisdom of this arrangement when we consider that of modern toys many have a definite educational purpose, and are designed expressly to beguile the little ones into efforts of observation, of counting, of construction, or of invention. Moreover, it must not be forgotten that everything which helps a little child to open its eyes and look about him, which teaches him to use his fingers, which fills his dreams and fancies with happy images, or even which only gives him an hour of innocent enjoyment, plays a part in his education which none but a pedant can afford to disregard.

The walls of the apartment are covered with maps and diagrams, of which the most conspicuous is a gigantic map of the British Isles.

Classes thirty, thirty-three, thirty-four, and thirty-five, under the management of Mr. J. B. Waring, consist of furniture, paper-hanging, and other wall decorations; works in the precious metals and jewelry; pottery and glass of every description. In Class thirty, the well-known names of all the leading manufacturers guarantee a first-rate exhibition. About two thousand five hundred square feet are set apart for contributors in the Mediæval style, and are filled with a series of remarkable works, illustrating the great advance made in this particular branch of Art since the formation of the Mediæval Court, in the first Exhibition of 1851.

The arrangement of this court was carried out by Mr. Burges and Mr. Slater, and they are able to show, amongst other things, a reredos by Mr. Street, executed by Mr. Earp, and a portion of that for Waltham Abbey, with the cartoon of the rest. There is likewise a cast of the sculpture in the Bedminster reredos. Mr. Redfern contributes casts of his sculptures of the Ascension, for the Digby Mortuary Chapel at Sherborne, and for the Westropp monument in Limerick Cathedral,—the latter being arranged in connection with a portion of the actual carved work of the monument. Several exhibitors contribute fonts, and there is a cast of the renaissance font at Witley, carved by Mr. Forsyth.

A cast of Dr. Mill's monument (designed by Mr. Scott) and effigy at Ely has been sent. Mr. Nichol sends another effigy arranged on a high tomb in connection with some subjects in relief. The late Lord Cawdor's high tomb is also exhibited; and one of the circular panels, with a cut subject, for the Lichfield pavement. In woodwork, there are the stalls of Chichester Cathedral; a rich bureau, which was shown about two years ago at the Architectural Exhibition; and a decorated organ.

In metal-work, one exhibitor sends a rich iron font cover; the Ecclesiological Society exhibits the frontal which it is going to present to St. Paul's Cathedral, designed according to the "Cologne" method; and the Dean of Peterborough has kindly lent the new frontal for his cathedral, executed by the Ladies' Ecclesiastical Embroidery Society.

Two well-designed groups of furniture, one in the mediæval style, the other of the modern school, are placed at the east entrance of the main avenue. The Goldsmiths' Court is filled with a noble display of works in the precious metals; three richly grouped trophies in the main avenue attest the artistic excellence of the designs executed by the prominent exhibitors, and for the first time also the working jewellers of Birmingham come forward in a body to challenge comparison with the London, Scotch, and Irish jewellers.

In Class thirty-five the leading firms are bent on surpassing all former efforts; some with majolica and Palissy ware, encaustic tiles, and a frieze by Lucca della Robbia; others with parian and china, from designs by Durham, Marochetti, Monti, Foley, Gibson, and Marshall. One of the fountains is a triumph of ceramic art, and the china trophy in the main avenue is a worthy pendant to one by another exhibitor. One firm contributes the main feature of the court itself, which contains evidence also of the energy and advancing taste of the principal firms of the Staffordshire potteries. Every description of glass is well represented in Class thirty-four, and in the stained-glass gallery, and the great northern windows of the east and west transepts, the old and the younger rising firms bear witness to the great progress made during the last ten years in elaborate stained glass compositions, secular as well as ecclesiastical. Two handsome trophies of glass are placed in the nave. Classes thirty-seven and ten (*c*), the one consisting of architectural designs and models, the other of large works remarkable for architectural merit, such as church doors, altars, pulpits, &c., both under the charge of Mr. Waring, will perhaps, more than any other classes in the Exhibition, sustain the well-deserved reputation of our countrymen in the art of architecture. If this art is not so attractive to the public generally as the more easily appreciated arts of painting, sculpture, and decoration, it will be acknowledged by all connoisseurs foreign and English, to be that in which we exhibit works of pre-eminent excellence.

In Classes six, thirty-one, thirty-two, and thirty-six,—comprising carriages, iron and general hardware, steel and cutlery, and unclassified manufactures,—which are under the management of Mr. T. A. Wright—the display has much of an art character. The prominent features in Classes thirty-one and thirty-two—placed in the south end of the south-eastern transept—are the screen for Hereford Cathedral; Bessemer's specimens of his patent steel (a new product since 1851); a new peal of bells, which are so made that they may be chimed by a child ignorant of music; and a large class trophy, to which two firms have contributed elaborate specimens of ornamental metal work; and two others equally elaborate specimens of mediæval metal work. Several separate courts and collections in this section of are worthy centres of attraction.

Some beautiful iron-work gates—called the Norwich gates—are exhibited in the nave. In the carriage section (Class six) of this department there is a trophy-drag—a specimen of what may be considered as our national carriage; and Class thirty-six, comprising dressing-cases and travelling-bags—which were not honoured

with a class in 1851, has gratefully erected a magnificent trophy-case designed by Mr. J. B. Waring, filled by four exhibitors with dressing-cases, despatch boxes, &c.

The Birmingham contribution to this collection contains a very complete representation of the various articles in metal for which the town and district has so long been celebrated. The court more particularly appropriated to the display of articles in Class thirty-one—the general hardware court—contains the productions of more than one hundred exhibitors. At its entrance will be found a display of metallic bedsteads, raw materials of every kind for the use of brass-founders, also gas-fittings of all kinds, and stamped and general brass-foundry. Tin-plate working and japan wares, wire-drawing, fire-irons, stoves and grates, iron safes, hollow wares in copper and iron, tinned and enamelled, tubing of all kinds, scales and weighing machines, medals and dies, hooks and eyes, pins, steel pens, locks and general hardware, knife-cleaning machines, steel toys, metal mountings for the use of bookbinders, fire-guards, coffin furniture, saddlers' ironmongery, ornamental panels of various kinds, screws, nails, hinges, &c., &c., are also exhibited; and, in fact, as far as Birmingham is concerned, all its leading branches of industry are fully represented by all its leading manufacturers. The majority of the exhibitors in 1851 are again present, with other houses which now for the first time have entered the industrial field. In other parts of the building will be found the contributions of its gun-makers and sword-cutlers; its glass; its horological instruments; its leather, saddlery, harness, and whips; its buttons; its manufactures in papier-mâché; its steel and cutlery; and the results of the workings of its jewellers, electro-metallurgists, and silver-plate workers.

The collection in the Sheffield and Rotherham court—under Class thirty-one—comprises stove grates, fenders, fire-irons, hot-air stoves, kitchen ranges, ornamental iron-work consisting of hat-stands, ballusters, &c., &c., manufactured by most of the firms who exhibited in the Exhibition of 1851.

A portion of this court is occupied by Britannia metal goods, brass goods, consisting of high-pressure taps, cocks, hydrants, &c., &c.

Adjoining Class thirty-one are exhibited in cases round the walls, edge tools, joiners' tools, files, steel table-knives, scissors, sheep shears; and above, in vertical cases, saws, scythes, sickles, &c., and the general class of Sheffield manufactures.

On one block are exhibited goods of a similar character to those on the counters round the walls, but including steel, springs, &c.

Two other blocks are occupied by goods of a new class of manufacture, consisting of heavy castings of steel, crank axles for locomotives, driving wheels, axles, tyres, points for crossings, bells, railway-carriage springs, buffers, &c., &c., which it is anticipated will prove of a superior quality to those shown by German manufacturers. The above articles are now being made in large quantities, and have, since the last Exhibition, become one of the most extensive branches of the Sheffield trade.

The counter under the gallery is covered with cases filled with fine cutlery—scissors, tailors' shears, table-knives, small edge-tools, bowie-knives, hatchets, &c., being samples of goods for which Sheffield holds so high a position.

The goods displayed by Walsall exhibitors represent all the important branches of trade for which that town is justly celebrated. There is nearly every description of saddlery, harness, and bridle work; also saddlers' ironmongery, comprising all kinds of bits, stirrups, silver-plated and brass harness, carriage furniture, &c. &c.

The collection sent by Wolverhampton comprises a variety of locks, and amongst them a new patent keyless lock, based upon the permutation principle, which has been manufactured for this department of the Exhibition, having two hundred and forty-four millions one hundred and forty thousand one hundred and twenty-five combinations, to open all of which would take a man—supposing he could live so long—one hundred and thirty years. Safes, hollow-ware, general hardware, and choice examples of japanned goods complete the contributions from this important manufacturing centre.

The following is a list and plan of the main trophies fixed throughout the British half of the building:—

This completes the industrial portion of the British side, and we may now turn to the colonial and Indian collections.

The colonial and foreign exhibitors—being mostly at a safe distance—were not so difficult to deal with as the home exhibitors. Twelve thousand eight hundred and twenty-two superficial feet were detached from the British half of the space for the British colonies, and apportioned as follows:—

EAST INDIAN COLONIES (exclusive of India) :—		Superficial sq. ft.	
Ceylon	}	300	
Mauritius and Seychelles			
Straits Settlements			
Hong Kong			
Labuan			
AUSTRALIAN COLONIES :—			
Victoria	}	4,550	
New South Wales			
Queensland			
South Australia			
Western Australia			
Tasmania	}		
New Zealand (European only)			
SOUTH AFRICAN COLONIES :—			
Cape Colony	}	640	
British Kaffraria			
Natal			
WEST AFRICAN COLONIES :—			
Sierra Leone	}	200	
Gambia			
Gold Coast			
St. Helena			
MEDITERRANEAN COLONIES, &c. :—			
Gibraltar	}	400	
Malta			
Ionian Islands			
Aden			
Heligoland			
Falkland Islands	}	5,895	
NORTH AMERICAN GROUP :—			
Canada			
Nova Scotia			
New Brunswick			
Prince Edward's Island			
Newfoundland			
Bermuda			
Vancouver			
British Columbia			
WEST INDIES :—			
British Honduras	}	897	
British Guiana			
Jamaica			
Bahamas			
Turk's Island			
Trinidad }			
Barbados			
Grenada			
Tobago			
St. Vincent			
St. Lucia			
Antigua			
Montserrat			
St. Kitts			
Nevis			
Virgin Islands			
Dominica			
Total		12,822	

In 1851, the colonies were, as a whole, almost unrepresented. The notice given was too short; the undertaking was hurried; the project was quite new, and not thoroughly understood; and, moreover, most of the colonies were scarcely in

a position to go to much expense for contributions. The East India Company, however, made a noble display, and some few of the British colonies a respectable appearance in 1851, and also at Paris in 1855.

According to the latest official returns, the aggregate population of the colonies and possessions under British rule exceeds one hundred and ninety-five millions, of which the great bulk, one hundred and eighty-five millions, are distributed over British India. In these colonies a total revenue is raised of about forty-four million pounds, and the yearly value of the external trade, imports and exports, is upwards of one hundred and seventy-six million pounds.

It appears, from the official reports, that out of twenty-three thousand five hundred and seventy-five superficial feet of horizontal net space allotted to the British colonies in 1851, but six thousand one hundred and eighty feet were occupied. The only colonies then specially represented were—Canada, which made a good display; a few objects indirectly sent for exhibition from Nova Scotia, New Brunswick, Newfoundland, and Bermuda. From the West Indies a small collection was sent from the Bahamas, and a few odds and ends from Antigua and Barbados. Trinidad and British Guiana were well represented. Of the African colonies, the Cape was the only one that sent a collection; a few objects illustrating the products of St. Helena and the West Coast of Africa were shown by London merchants and individual exhibitors in England.

Of the Eastern colonies, the Mauritius sent but little; but a fair collection was transmitted from Ceylon.

In 1851, the Australasian colonies were but poorly represented, although a few made some efforts to put in an appearance. The New South Wales and Tasmanian collections were creditable, and a few things were sent from South Australia and New Zealand. With the exception of a small collection from Malta, this formed the aggregate of the colonial efforts.

At the Paris Exhibition in 1855, the few colonies that did send articles made a very satisfactory display. Canada, especially, obtained honour for its varied collections, which occupied upwards of three thousand feet of space, contributed by about three hundred and fifty exhibitors. Jamaica covered an area of about five hundred feet, and British Guiana three hundred and fifty, whilst Barbados and the Bahamas were the only other West Indian colonies that sent. Ceylon occupied nearly as much space as Demerara, and the Mauritius sent a small collection. The Australasian colonies on that occasion were very well represented, although one or two did not show; two hundred and fifty-one exhibitors from New South Wales occupied eight hundred and seventy-one square feet; one hundred and eighteen exhibitors from Tasmania, four hundred and twenty-nine feet; thirty-six from Victoria, two hundred and eighty-nine feet; and ten from Newfoundland, one hundred and seventeen feet. The official returns show that the twelve British colonies which exhibited products at Paris in 1855 filled about five hundred feet more space than all the colonies which were represented in 1851.

The contributions from the colonial possessions and many of the miscellaneous and outlying countries which have no special government, or where no commission has been formed, are under the superintendence of Dr. Lindley, F.R.S., who, besides his well-known scientific attainments, brings to the work the business knowledge and experience gained in the same department at the Exhibition of 1851.

The following Table gives the population, revenue, debt, and foreign commerce of the dependencies of the British Empire, chiefly for the year 1859, the latest date for which complete statistics can be obtained:—

COLONY.	Population according to the last return.	Revenue.	Debt.	Imports.	Exports.	Total external commerce.
		£	£	£	£	£
EASTERN—						
India	185,908,277	36,060,788	97,851,807	34,515,650	30,532,298	65,077,948
Ceylon	2,000,000	747,037	None.	3,474,487	2,524,752	5,902,239
Mauritius and Seychelles	313,047	609,634	None.	2,025,890	2,544,793	4,570,683
Straits Settlements	273,774	125,453	None.	7,811,698	7,422,855	15,334,553
Hong Kong	86,941	70,000	None.	Not stated.	Not stated.	..
Labuan	1,774	6,707	None.	30,724	6,358	37,082
AUSTRALASIAN—						
Victoria	540,322	3,257,724	8,000,000	15,622,891	13,867,860	29,490,751
New South Wales	336,572	1,511,964	2,500,000	6,597,053	4,768,049	11,365,102
Queensland	25,000	160,000	None.	521,695	609,794	1,131,489
South Australia	122,735	511,927	830,200	1,507,491	1,655,876	3,163,370
Western Australia	14,837	57,945	None.	125,315	93,037	218,352
Tasmania	86,596	429,425	345,260	1,163,907	1,193,898	2,357,805
New Zealand (European only)	71,508	459,649	500,000	1,551,030	551,481	2,102,514
AFRICAN SETTLEMENTS—						
Sierra Leone	38,318	31,432	None.	169,727	247,261	416,988
Gambia	6,939	15,599	None.	76,150	110,364	186,514
Gold Coast	151,000	8,286	None.	114,596	118,563	233,159
St. Helena	5,490	20,736	None.	120,181	21,465	141,646
Cape Colony	267,096	650,925	868,711	2,579,359	2,621,371	4,599,720
British Kaffraria	..	..	None.	..	..	..
Natal	160,170	50,905	165,000	199,917	110,415	310,332
MEDITERRANEAN POSSESSIONS, &c.—						
Gibraltar	17,750	32,500	None.	Not stated.	Not stated.	..
Malta	145,802	147,385	None.	2,428,909	1,775,794	4,204,703
Ionian Islands	233,973	130,262	300,000	1,306,303	649,057	1,955,360
Aden	..	..	..	..	45,297	..
Heligoland	2,800	..	..	..	..	..
Falkland Island	540	7,657	None.	13,890	6,892	20,782
NORTH AMERICAN COLONIES—						
Canada (Census 1861)	2,501,370	1,947,829	11,661,010	4,953,396	6,711,032	11,664,428
Nova Scotia	277,117	139,788	200,000	1,620,191	1,377,826	2,998,017
New Brunswick	193,800	160,107	226,025	1,416,034	1,073,122	2,489,156
Prince Edward's Island	80,872	27,402	28,966	234,698	178,680	413,378
Newfoundland	122,638	133,735	182,500	1,323,288	1,357,143	2,680,431
Bermuda	10,982	16,765	None.	160,911	41,420	202,331
Vancouver	18,000	..	..	..	..	..
British Columbia	6,000	50,000	None.	177,219	168,000	345,219
WEST INDIAN POSSESSIONS—						
British Honduras	29,000	27,982	None.	175,293	288,161	463,454
British Guiana	127,695	275,618	449,802	1,179,901	1,228,811	2,408,715
Jamaica	377,433	279,935	913,607	853,015	961,007	1,814,022
Bahamas	27,619	30,727	None.	213,166	141,896	355,062
Turk's Island	3,300	11,067	900	42,655	33,488	76,143
Trinidad	68,600	180,174	232,417	731,962	820,606	1,555,568
Barbados	135,939	87,595	None.	1,049,237	1,225,572	2,274,809
Grenada	35,517	16,948	9,400	121,660	131,307	255,967
Tobago	16,363	9,100	..	57,601	77,807	135,388
St. Vincent	30,128	19,911	..	131,451	178,990	310,441
St. Lucia	30,000	12,832	15,000	103,973	101,879	205,852
Antigua	36,000	31,416	47,500	203,997	280,063	483,060
Montserrat	7,053	3,513	..	19,718	46,746	66,464
St. Kitts	20,741	17,845	None.	110,835	136,514	247,349
Nevis	9,571	4,721	None.	31,748	48,186	82,934
Virgin Islands	6,053	19,993	None.	10,075	11,789	22,864
Dominica	25,023	14,211	8,000	66,506	96,861	163,367

The colonies and outlying dependencies exhibiting, arranged alphabetically, with a rough estimate of their exhibitors, are:—

	Approximate Number of Exhibitors.		Approximate Number of Exhibitors.
Bahamas	5	Natal	Commission.
Barbados	Commission.	New Brunswick	36
Bermuda	"	Newfoundland	22
British Columbia	"	New South Wales	335
British Guiana	"	New Zealand	114
Channel Islands	5	Nova Scotia	65
Canada	Commission.	Prince Edward's Island	Commission.
Cape of Good Hope	"	Queensland	98
Ceylon	41	South Australia	77
Dominica	Commission.	St. Helena	Commission.
Grenada	Nothing.	St. Vincent	4
Hong Kong	Commission included in China.	Tasmania	650
Jamaica	195	Trinidad	1
Malta	Commission.	Vancouver	6
Mauritius	22	Victoria	Commission.
		Western Australia	69
		Total	1,745

Most of the industrial divisions in the Exhibition are well filled by nearly all the colonies exhibiting; and the collection of raw produce is particularly rich and interesting.

The Eastern colonies begin with Hong Kong, which shows a small but interesting collection of Chinese produce and manufactures, and takes under its wing a number of British merchants, officers, and some exhibitors who show choice and very attractive specimens of Chinese industry and silk, rich velvets, silk and gold embroidered carpets, porcelain, china, enamels, and articles of raw produce.

Ceylon has forwarded a very large and interesting collection of colonial products—coffee and cinnamon, woods and fibres, pearls, &c. Mauritius sends beautiful specimens of sugar, fruits, and vegetable substances.

The Australian colonies exhibit one of the most extensive and finest collections of the whole group, and on the collecting, arranging, and despatching of these a very large amount of money has been expended.

New South Wales has a beautifully arranged collection of its gold products from all the principal fields, in the several shapes of nuggets, quartz, grain gold, washing stuff, coin from the Sydney mint, &c. It sends an excellent assortment of Australian wines, the best of its wools and fleeces, and cloth made from them, and stuffed alpacas and the shorn fleeces of the flocks now in the colony; coal, minerals, native woods, and various agricultural produce and manufactures.

Queensland, which appears for the first time in Europe, has come forward most creditably with its ornamental and useful woods, wool, cotton, and tropical products.

South Australia is principally strong in its rich mineral products of copper and lead, and malachite manufactures, and its wheat and flour, for which it has always been noted.

Western Australia also sends specimens of woods, in which it is especially rich, some of the spars and planks being very fine. Its other products assimilate to those already mentioned.

Victoria has gone to great expense to forward an enormous collection; the only difficulty being to find room for one-half the goods sent. One of the most striking objects is a gilded obelisk representing the actual amount of gold found in the colony since 1851—about eight hundred tons, or one hundred and three millions sterling. Its manufactures and general industry are well represented, and a more extensive and varied collection has never before been sent from any British colony to Europe.

Tasmania sends, besides its wool, manufactures and agricultural produce, a noble trophy, rising ninety or one hundred feet, made of its native woods, with a circular staircase in the interior. Two whale-boats with all their gear are slung from it, and a fine native spar, surmounted with a flag, rises from the centre.

New Zealand sends from several of its provinces wool, wood, coal, gold, and agricultural produce.

The African settlements which exhibit are:—Natal, which though a comparatively young colony, has taken great pains to get together a fitting representation of its indigenous wealth and native industry. Tropical industry, agriculture, and the products of the chase are chiefly represented, and a large counter or carved side-board of native wood, with glazed panels, covering charts, photographs, and water-colour drawings of natives and scenery, forms a striking object. The Cape Colony is unrepresented, except by a few individual exhibitors. St. Helena and one or two of the other West African settlements have sent small contributions.

The Mediterranean possessions which exhibit are Malta and the Ionian Islands. The former shows stone, lace, silver work, and other products of industry, with some agricultural specimens. The Ionian Islands have a fine collection, not only of agricultural but of manufacturing industry, sent by about one hundred and seventy exhibitors. The embroidery and silver filigree work, the silks, and other articles, are very elegant.

The North American colonies generally have sent a large collection, and all are well represented. Canada has been rather tardy; but the Lower Provinces have taken great pains to send such collections as may give a fair idea of their chief products. Timber, minerals, the products of the fisheries, agricultural and other implements, hardware, and homespun form their main products.

The West Indian possessions exhibit, if not much variety, still many interesting articles. Their staples of coffee, sugar, rum, arrowroot, and cocoa possess, it is true, little novelty; but their woods and fibres are valuable, and their gums, oils, drugs, and other raw materials, will be examined with interest by many manufacturers.

We next come to India proper, which has ten thousand superficial feet of space allotted to it, a deduction from the British half of the building. The management of this large and important part of the Exhibition has been given to Dr. J. Forbes Watson, the reporter on Indian products, who has devoted so much attention to a due development of the staples of India, and has lately been so closely occupied in re-arranging the valuable East India Museum at Fife House, Whitehall Yard.

The collection is more varied and extensive than the former one in 1851, when India had twenty-four thousand feet assigned to it. The articles for which space cannot be given have been removed to the India Museum, Fife House, Whitehall Yard, there to constitute a supplementary collection.

The India Museum itself contributes from its varied resources a collection of very considerable interest; and several firms in this country, in their capacity of importers, as well as a few private individuals, exhibit valuable specimens.

Some examples showing the aptitude of cloth made of Indian cotton for taking dyes are worthy of special attention.

Glancing at the productions of special importance consigned direct from India we have first those from Bengal.

The collection from Bengal, the North Western Provinces, Oude, the Punjab, Burmah, the States of Ulwar, and the Tenasserim and Martaban Provinces, including the Straits Settlements, is of great interest. It amounts to nearly six thousand specimens, equal to more than double those sent from the same parts in 1851.

First stand the collections of the products of the soil, and among these particularly that of oil seeds, oils, gums, resins, medicinal substances, fibres, and timbers. Under this head tea occupies a prominent position, the tea districts of Assam, Cachar, Sythet, Darjeeling, Dehra Dhoon, Gurhwal, Kumaon, and Kangra being all represented. This division of the Indian collection, whilst containing a number of specimens entirely new or never before exhibited, comprises a large variety of products indigenous to different localities.

Among the articles contributed are several which show the great improvement which has undoubtedly taken place in a variety of manufactures, and even of works of art.

Amongst the latter, the paintings on ivory from Delhi show a great advance in that branch of native talent.

Among the specimens forwarded on the present occasion, there are two—one a landscape, the other the interior of a temple—which will attract attention.

Several of the paintings are faithful copies of photographs taken at Lucknow.

The Calcutta “Chickun” work, or needle embroidery, is deserving of special notice. The assortment comprises specimens of extraordinary cheapness, as well as of the highest finish.

The floss silk embroideries on Cashmere cloth and net from Delhi are particularly fine. Though greatly superior to what has been sent on former occasions, they have the further advantage of greatly improved patterns, with extraordinary cheapness.

Carpets show a considerable advance in workmanship, and the blending of colours is remarkably fine.

Of Cashmere shawls the collection is very large. The greater portion consists of private contributions, and comprises varieties of every description. Some sent from Sirinuggur, the capital of Cashmere, and from Umritsur, are considered very superior.

The “kuftgori” work, or steel inlaid with gold, from Goojerat, in the Punjab, will attract the attention of those interested in this kind of manufacture.

The collection contains a variety of articles under the name of papier-mâché, those made at Cashmere being deserving of notice. The specimens sent show considerable improvement in comparison with those contributed in 1851 and 1855.

The assortment of silk cloths from various parts of India is very large. Some from the Punjab and other parts are excellent, and of brilliant dye.

The embroidered silks and brocades from Benares stand unrivalled. The workmanship is of the highest finish, whilst the interweaving of the gold and silver threads with the silk shows exquisite taste. The kinkobs or brocades are very rich.

The greater portion of the collection under the head of manufactures in cotton and hemp consists of specimens of cloth, &c., made by prisoners in the various jails; those from the Punjab and from Meerut, as well as the hemp fabrics from Barnagore, near Calcutta, are worthy of special notice.

The specimens of paper forwarded with the present collection form a large variety. There is the famous paper made of the daphne plant at Nepal, illustrated by the fibre of the fresh shrub and specimens of all the stages of its preparation.

The manufactures in straw from Monghyr are good, and their merit is enhanced by their cheapness.

The lac-work sent from Bareilly shows a great improvement in comparison with the specimens sent to the Paris Exhibition.

The turnery from Lahore, called "pack puttan" work, commends itself on this occasion by its superior workmanship.

In addition to a collection of clay figures from Kishnagur, are some excellent specimens of plastic models from Oude.

Of sculpture there is a large variety of specimens in stone, ivory, marble, and various kinds of woods, all of them much superior to any hitherto forwarded, the ivory carvings from Berhampore being especially remarkable.

From Cuttack the silver filigree work upholds the reputation of native workers in the precious metals for minuteness and accuracy of design and execution.

The muslins, plain and embroidered, of Dacca manufacture will as usual command admiration from their peculiar delicacy of texture.

The collection from Bombay is interesting and important.

Cotton, its preparation and manufacture, is well represented. His Highness the Rao of Kutch contributes samples of raw and manufactured cotton from Bhooj, Kutch, and Mandanee, and the cloth as made largely at the last-named place for exportation to Muscat and the Arabian coast. There are also specimens from Seebee, Jacobabad, and Shikarpoor, of the raw material; and from Khyrpoor His Highness Meer Ali Morad sends cotton cloth and chintz as applied to clothing purposes. The districts of Broach, Khandeish, Rewa Kanta, Belgaum, Dharwar, Guzerat, Kattiawar, South Mahratta, Berar, Pahlmpoor, Thurad, Wurryee, and Ahmedabad, in the manufacture of cotton, are well represented; the towellings, canvas, and duck from Broach being also varied and remarkable.

Rich samples of raw, manufactured, and dyed silks have been forwarded from Khyrpoor, Musher, Shikarpoor, Kutch, Zeyd, Bokhara, Cabul, Kishur, Candahar, Mandanee, Dharwar, Ahmedabad, and Belgaum, while most of these places furnish specimens of mixed silk and cotton fabrics.

In wool and woollens, Bombay sends examples of the produce and manufacture of Cashmere, Cabul, Herat, Musher, Khorassan, Kelat, Kutch, Dharwar, and also Shikapoor and Upper Scinde, whence come specimens of fibre, and goats' and camels' hair.

The plain and embroidered muslins from Bombay give a fair idea of the quality of manufacture under this head at Khyrpoor, Bhooj, Kutch, Surat, and

other places, while the embroideries generally, on velvet, silk, leather, and cloth, are of a high degree of excellence, both in design and execution.

In works of art or skill, Bombay is more than adequately represented, as the elaborate carvings in black-wood, sandal-wood, and ivory, and in a material termed "ratanglee," from Malabar, will fully testify. The articles of inlaid ivory, &c., are also of a high degree of excellence, while the same description of work and enamelling in the precious metals is well represented by arms and armour contributed by their Highnesses Meer Ali Morad of Khyrpoor and the Rao of Kntch. The last named also presents costly specimens of skill in the gold and silversmiths' art. The shield exhibited was manufactured at Mandancee.

The models are mostly copies of agricultural implements, showing the local mode of preparing the land for the culture of cotton, grain, pulses, &c.

In other manufactures and arts there are samples of cutlery, jewelry, lac-ware, &c., from Bombay and Seinde, and in mineral products and works in stone, &c.; alum, saltpetre, subcarbonate of soda, from Seinde; indigo from Jacobabad; sulphur, lead, copper ores, and "galena," from Beloochistan; agates and carnelians from the Ruttimpoor mines in Rewa Kanta; and a substitute for marble from Bhooj.

The collection from Madras, if not so large as those from the other divisions of India, yet consists of a great variety of specimens. A valuable portion of the whole consignment from this presidency is that which, under the head of raw products, includes timbers, oils, seeds, gums, resins, dyes, &c.

There is a valuable assortment of woods from Vizagapatam, South Canara, and Bangalore, of oils from South Canara, of dyes, gums, saltpetre, sugar, and candies from Salem and North Arcot; mineral products and shells from Vizagapatam and the Andaman and Cocos Islands. Of grain and seeds, Madras sends a good assortment, as also does South Canara, whence there are fair samples of condiments, spices, medicinal substances and distillations, fruits, &c.

Of fibres and rope, Burmah, Chinglepet, Vizagapatam, Bangalore, and Salem each send examples, the last named and Cuddapah furnishing indigo and coffee.

Passing to the important article of cotton, we find Oopum and Bourbon cotton from Salem in small quantities, and raw and manufactured specimens from Arnee, Chinglepet, North Arcot, Bangalore, and other localities.

Of woollens there seems to be but a limited supply, and of silks, raw and manufactured, the best samples are those from Salem and Madras (town); a rug of this material from Tanjore will attract attention.

The muslins are chiefly from Madras, Arnee, and Salem, and include a specimen woven from a peculiar thread at Maderpak, North Arcot. This collection, though small, is particularly good.

In shawls, embroideries, and silks, those forwarded from Madras are like the specimens from other parts of India, unrivalled in variety and beauty of design. The lace work from Tinnevely and Vizagapatam is also worthy of high commendation.

Glancing at the few rich feather ornaments from Kurnool and Vizagapatam, the large straw mattings from Pulghant and North Arcot, the writing-paper from Madras and Salem, and the large assortment of carvings and constructions in ivory, sandalwood, buffalo-horn, and porcupine-quills deserve notice. Specimens of this

work are sent from all parts of the presidency,—and through Madras from the Malay peninsula,—from the town of Madras, North Canara, Vizagapatam, Malacca, Burmah, &c., while Bangunpully, Hyderabad, and Burmah contribute a limited number of specimens of lac-ware.

The models of useful appliances include a portable kitchen and compendious sandwich-box from the Andaman Islands; while as works of art and skill, an exquisite temple from Burmah, a curious model in pith from Tanjore, and some copper figures from North Arcot are worthy of notice.

Of arms, cutlery, &c., the collection for exhibition is comparatively small, Salem, Malabar, and Burmah supplying the best specimens.

The fine arts in Madras are represented by a collection of engravings, photographs, and drawings. Some miniatures on ivory especially illustrate the delicacy of finish, minuteness of detail, and brilliancy of colour which have ever been remarkable in native drawings, while in these, as in some of the Bengal drawings, a marked improvement will be noted with regard to shade and perspective.

Among the varieties from Madras may be especially mentioned the pottery from the School of Industrial Arts in Madras, as well as from Bangalore and North Arcot; these, with most of the examples of native manufacturing and artistic skill, affording abundant evidence of the existing will and ability to adapt the wealthy resources and produce of India to the requirements of an advanced stage of civilization.

The samples of raw produce received for exhibition from Mysore include cotton and silk from Bangalore and Chittledroog, grain, oil, pulses, and substances used for food from Bangalore, Astagram, Chittledroog, and Nugger, honey from Coorg, and sugar from Paulhully.

Mineral substances have been sent from Chittledroog, Astagram, and Bangalore.

In manufactures, the most noticeable collections are in cotton, silk, and wool (plain and embroidered), from Bangalore, Astagram, and Chittledroog. There are also carpets from Bangalore, and models and carvings in sandal-wood, of which with some inlaid work, there are several good specimens.

From Burmah, in addition to the many specimens forwarded through the Bengal Committee at Calcutta, a large collection has been contributed by Messrs. Halliday, Fox, and Co. This extensive assortment comprises a large series of grains, woods, medicinal roots, seeds, spices, pulses, and cotton, and specimens of metal, ivory, precious stones and gold dust (from Ava).

The samples of Burmese manufactures, &c., include musical instruments, jewelry, models of boats, implements, &c., and some curious Burmese pictures.

An extensive collection of woods has been forwarded from Rangoon for the purpose of illustrating the timber growth of the province of Pegu.

Of the raw produce and manufactures of Singapore, Penang, Malacca, &c., a well-selected variety has been forwarded for exhibition, especial care having been taken to fairly illustrate the natural resources of the Malay Peninsula, and the adjacent islands.

The mineral classes are represented by coal from Borneo and Malacca, iron from Saigoor (Cochin China), earths and clays from Singapore, Malacca, and Penang. The tin ore of Kassang, Malacca, Penang, &c., is stated to yield

from forty-five to sixty per cent. of metal after a rude process of washing and smelting.

Vegetable substances are fully represented by a choice collection of woods from Malacca, Penang, &c., each contributing a variety of specimens.

There are also samples of fibres from Singapore, Malacca, Manilla, Penang, Siam, the Eastern Archipelago, &c. ; rope from Penang, tanning substances from Singapore and Rhio, dyes from Cambodia, Penang, and Siam, vegetable tallow from Cochin China, Siac, and Borneo, gutta percha from the Malay Peninsula and the Eastern Archipelago, and tobacco from Bally and Penang.

Of grain specimens are forwarded from Singapore, Malacca, and Province Wellesley, Penang, whence comes an excellent assortment of rice.

Siam, Java, Sambawa, and Malacca furnish seeds and pulses. Singapore, Malacca, Sarawak, and Penang send sago, arrowroot, and spices ; and from Singapore and Penang fair samples of sugar and coffee.

Another important feature in this consignment is the collection of medicinal substances and processes from Singapore and Malacca ; while the oils and gums from these places, and from Siam, Sumatra, Java, Cochin China, and Malacca are unusually interesting.

Of cotton, the principal specimens are from Singapore, Malacca, and Penang, while the manufactures consist principally of arms from Tringanu and Malacca ; embroideries and silks from Singapore and Penang, and lace from Malacca.

The works in metals, &c. (including implements), come from Malacca, Penang, and Singapore, while the lac-ware of Tringanu and Singapore, and the work-boxes made of the pandanus palm will be found curious of their kind.

There is also a collection of photographic portraits of natives. The importance and value of this consignment rest on the very interesting series of samples forwarded, and which well illustrate the productive character of the soil from which they have sprung.

This completes the industrial portion of Great Britain and her dependencies, and we now just touch upon the fourth British section of the exhibition.

The division of modern fine arts—comprising paintings, drawings, sculpture, and engravings—is fully described in its special catalogues, but we cannot pass it over without a few words.

The main portion of the building set apart for the reception of works of art stretches to the right and left of the principal entrance, and occupies the upper part of the whole frontage in Cromwell Road. Branching off from each extremity smaller galleries, on the same level, run at right angles to the principal galleries, along the Exhibition Road and Prince Albert's Road ; and, as far as the domes, the walls are entirely covered by paintings in oil and water-colours, and drawings, an important addition to the attraction on this occasion, paintings not being included in the International Exhibition of 1851. These have been grouped together in Class thirty-eight. The space has been divided into two equal parts, and while the south-western angle has been appropriated to foreign artists, the south-eastern portion is devoted to the exhibition of works by masters of the British school.

To convey any adequate notion of the British treasures of art collected here, or of the machinery by which they have been brought together, would be impossible within the limits, and foreign to the purpose of this summary. This will easily be

PICTURE GALLERY, 1862.

understood when it is known that fourteen hundred pictures are here exhibited, and that the greatest care has been taken to prevent the admission of any but works of the highest character.

The period of art represented is that between 1762 and 1862. This includes Hogarth, who died in 1764, and with very few exceptions may be considered to embrace every artist of eminence who has flourished in the United Kingdom.

In the catalogue of a collection gathered from public and private galleries—and liberally lent by many hundreds of art patrons—it is almost unnecessary to say that the names of Sir Joshua Reynolds, Richard Wilson, Bonington, Nasmyth, Morland, Etty, Hilton, Turner, and Leslie occur repeatedly, or that a due prominence has been given to such artists as Crome, Callcott, Raeburn, and Allan. Gainsborough and Sir Thomas Lawrence occupy, of course, distinguished places; and the list would be incomplete indeed that did not include many specimens of Collins, Constable, the Chalon, and Sir David Wilkie. Nor must notice be omitted of our truly national school of water-colour painting; founded by Cosens Girtin, and above all by Turner, whose works illustrate both the commencement and the full perfection of the art; those who laboured with them to extend its scope have not been overlooked, and Edridge, Robson, Davint, Fielding, Prout, and Varley, are well represented; while the works of Stothard, Barrett, and Cox lead up to the living representatives of this beautiful art. These specimens have been selected by Mr. Redgrave, R.A., Inspector-General for Art at the South Kensington Museum, and the collection must speak for itself of the care and judgment here displayed.

With the works of living artists—occupying as nearly as possible one-half of the hanging space in the British division—a different course has been followed. While the same supervision has been exercised to prevent the admission of inferior pictures, it was considered only just that the artists should themselves have a voice in deciding what—in the limited number for which room could be found—should be the particular specimens of their art by which each should be represented. A committee was accordingly formed in the early part of 1861, consisting of the presidents of the several art societies of the United Kingdom, under whose direction a list was drawn up of those artists who should be invited to contribute. To each of these an invitation was issued, and the order in which their works were entered upon the lists they sent in, has been observed as nearly as possible in the applications made for the loan of them to the several proprietors. If an equally satisfactory representation has not in all cases been the result, this has arisen from causes quite independent of the machinery adopted to produce it. The hanging has been the joint work of Mr. Redgrave (assisted by his brother, Mr. J. Redgrave), and Mr. Creswick, R.A.

The collection of sculpture, medals, and intaglios,—Class thirty-nine,—under the management of Mr. Edmund Oldfield, will be an important addition to the fine art section. For the first time perhaps in the history of such exhibitions, sculpture holds a prominent and recognized position side by side with painting. For many years at the Royal Academy it was thrust into an ill-lighted room, the most appropriate inscription for which would have been that well-known line from Horace,—“The perfection of art is to conceal art.” Here it has been carefully arranged about the building, to add to the general effect of the display, with the exception of one room devoted to the productions of deceased sculptors. This room contains fine examples of Banks, Flaxman, Chantrey, Westmacott, and Wyatt. All the modern artists have come forward to exhibit, and the result is that we have a fine collection numbering about one hundred and twenty statues of different sizes, forty or fifty busts, and twenty or thirty bas-reliefs. Mr. Gibson’s celebrated tinted Venus, which has been for some years past the admiration of foreign connoisseurs, is lent by its owner to the Commissioners of the International Exhibition. The

judges of art will thus have an opportunity of deciding for themselves whether colour enhances the beauty of sculpture. It is erroneously supposed that Mr. Gibson has tinted his statues to represent life, whereas he has only endeavoured by colour to soften the general effect, and to give the appearance of ivory, a material much used by the ancients. Apart from the colour, this statue is undoubtedly the finest work of modern sculpture. Mr. Gibson has represented his Venus as the Goddess of Marriage, a dignified and beautiful matron, with a tortoise at her feet. This statue was executed ten years ago for its present owner, and by his permission it remained in Mr. Gibson's studio at Rome until 1859. After that time it was removed to its owner's house, and it has never before been publicly exhibited. Nearly thirty of the principal pieces of statuary are arranged in the picture galleries and towers.

A small collection of intaglios, cameos, and medals—the latter containing many fine works of the Wyons, father and son—completes the general features of this important department.

The collection of British etchings and engravings—Class forty—is divided into two sections, the first containing the works of deceased, and the second those of living engravers. The former is divided into—Etchings, Line engravings, Mezzotints, Stipple, and Wood. The arrangement of each subdivision is a chronological one, not calculated according to the dates of the births or deaths of the artists, but as nearly as possible on the times when their principal works were published. The number of these represented is eighty-four; their engravings are about four hundred and fifty, and they occupy three hundred and twenty-seven frames. They are, with few exceptions, early proof impressions of the very highest quality.

The etchings do not call for any especial remark; but among the line engravings will be found the most celebrated works of Hogarth (those engraved entirely by himself), Browne, Woollett, Sir R. Strange, W. Sharp, the Heaths, Raimbach, the Cookes, and others of nearly equal importance.

The mezzotints are peculiarly interesting, and the wonderful productions of MacArdell, Pether, Dixon, Earlom, J. R. Smith, V. Green, and others, are sufficient to prove the unrivalled excellence of the British school in this branch of art.

The sections of stipple and wood engravings include many of the best specimens of Bartolozzi, Haward, Collyer, Scriven, Bewick, Clennell, Williams, &c.

The department of living engravers is similarly subdivided, with an additional section of lithographs, but the arrangement of each subdivision is an alphabetical one. It contains about three hundred works, by sixty-eight engravers, which fill nearly one hundred and eighty frames. With very few exceptions, the proofs are contributed by the artists themselves. The whole arrangement of this class has been undertaken by Mr. William Smith, assisted in the hanging by Mr. Colnaghi.

We now come to the foreign half of the Exhibition. It is impossible at present, and within the limits of this book, to do more than give an outline of this important section.

The following Table shows the different foreign countries (with their population, imports, and exports) to which half the available space in the present building was originally allotted:—

COUNTRY.	Population.	Value of Imports from in 1860.	Value of Exports to in 1860.
		£	£
Arabia	..	..	..
Belgium Kingdom.	4,671,187	4,070,866	3,964,670
CENTRAL AMERICA :—			
Mexico Republic.	8,137,853	490,221	538,949
Costa Rica "	135,000	224,909	196,091
Guatemala "	850,000		
Honduras "	350,000		
Salvador "	600,000		
China Empire.	415,000,000	9,323,764	2,915,542
Denmark Kingdom.	2,752,500	2,642,877	1,594,050
Egypt Viceroyalty.	5,125,000	10,352,574	2,598,912
Feejee Islands "	..	..	..
France and Algeria Empire.	39,500,000	17,895,210	15,759,258
GERMANY :—			
Austria Empire.	35,000,000	986,349	1,488,098
Northern Germany (The Two Mecklen- burgs, Hanse Towns)	1,100,000	7,524,016	13,850,705
Zollverein (Baden, Bavaria, Brunswick, Frankfort-on-the-Maine, Hanover, Hesse Cassel, Hesse Darmstadt, Nassau, Olden- burg, Prussia, Saxony, Thuringian Union, Wurtemberg)	33,543,000	7,920,511	4,846,283
Greece Kingdom.	1,100,000	677,342	374,211
Holland (and Colonies) "	18,200,000	8,713,952	10,247,151
Italy "	21,729,000	2,748,525	5,277,720
Japan Empire.	50,000,000	167,511	..
Liberia Republic.	..	..	..
Morocco Empire.	6,000,000	280,424	214,510
Norway Kingdom.	1,500,000	1,160,992	630,773
Persia "	10,000,000	..	31,970
Portugal (and Colonies) "	6,349,000	2,281,844	2,225,495
Rome Pontificate.	3,125,000	..	..
Russia Empire.	75,149,000	16,201,498	5,446,879
Sandwich Islands Kingdom.	70,000	298	35,373
Siam "	..	75,240	13,556
SOUTH AMERICA :—			
Argentine Confederation Republics.	1,200,000	1,101,428	1,820,935
Brazil Empire.	7,700,000	2,269,130	4,571,308
Chile Republic.	1,559,000	2,582,448	1,737,929
Ecuador "	1,041,000	107,033	76,271
New Granadan Confederation Republics.	2,224,000	24,940	854,500
Peru "	2,500,000	2,581,138	1,428,172
Uruguay "	301,000	867,328	944,002
Venezuela "	1,565,000	..	327,357
Spain Kingdom.	21,307,000	8,026,600	5,078,551
Sweden "	3,734,240	3,193,308	940,613
Switzerland Republic.	2,535,000	..	..
Tunis Empire.	1,000,000	13,954	4,845
Turkey "	35,600,000	3,253,246	5,206,566
Moldavia and Wallachia	4,000,000	2,252,242	201,273
United States Republic.	31,500,000	44,724,312	22,907,681
Western Africa	..	1,776,565	1,145,434
	857,752,780	166,512,595	120,495,633

Some of these states declined to exhibit, or were so tardy in accepting the space placed at their disposal, that they were unavoidably shut out from the Exhibition. The following list shows the exhibiting countries, with the space which they each fill in the building:—

Countries.	Horizontal space. Superficial Square Feet.			Vertical space. Super. Sq. Feet.		Approximate Number of Exhibitors.
	Ground.	Gallery.	Annexe.	Large Picture Gallery.	Small Picture Gallery.	
				Feet. Inches.	Feet. Inches.	
France and Colonies . .	94,419	28,350	24,750	350 0	250 0	4,000
Belgium	21,930	11,267	15,750	215 0	...	863
Austria	36,000	10,408	6,000	66 0	62 0	1,110
The Zollverein	49,500	13,562	20,250	196 0	451 0	2,875
Hanse Towns	6,225	3,400	...	...	...	254
The two Mecklenburgs . }						
Russia	10,800	3,250	...	30 0	40 0	659
Italy	8,906	6,875	2,000	63 6	58 9	2,070
Rome	3,469	...	...	15 0	10 0	16
Switzerland	9,000	4,836	2,000	37 0	40 0	482
Holland	7,200	...	...	100 0	40 0	385
Denmark	4,500	1,250	300	53 6	37 0	299
Sweden	7,200	1,750	900	35 0	30 0	608
Norway				32 0	36 0	213
Spain	4,000	1,875	...	37 0	27 9	1,133
Portugal and Colonies .	3,531	1,250	...	...	...	1,065
Turkey						15
Egypt	6,250	8,050	...	...	...	...
Tunis						...
GENERAL SPACE.						
Greece	800	1,250	...	...	...	252
Costa Rica	600	...	...	...	...	11
Guatemala	124	...	...	...	...	...
Brazil	1,250	...	...	...	...	230
Ecuador	1,000	...	...	...	...	...
Venezuela	300	...	...	...	...	...
Peru	200	...	...	...	...	38
Uruguay	224	...	...	...	...	34
GENERAL SPACE TAKEN FROM BRITISH HALF OF BUILDING.						
United States	5,250	...	...	...	...	60
China and Japan	1,350	...	...	...	...	35
India	10,000	...	...	...	...	251
Liberia						...
West and Central Africa . }						7
Ionian Isles	1,750	...	...	...	...	177
Madagasear						10
Haiti						1
Siam and Fejee Isles . . }						3
					Total ...	17,486

The French court and its approaches form a perfect exhibition by themselves, undisturbed by any jarring tints or effects produced by unsympathetic neighbours. Everything that human ingenuity, money, and taste can produce is exhibited in this court, and it will be from no want of energy if they fail to carry off the first prizes. Our great industrial rivals are determined to give us a royal entrance to their kingdom within a kingdom. The portico to their court, which they have erected in the nave, is of cast iron, and manufactured by M. Barbezat. It forms a corridor seventeen feet in breadth, twenty-five feet in height, and extending east and west one hundred and fifty feet, the entire length of the French Court. The portico in the centre has three divisions between four leading columns. The east and west divisions, ten feet in width, are entrances to the exhibition. The centre division, twelve feet wide, is backed by a noble sheet of spotless plate glass perfectly transparent, manufactured at St. Gobain. The dimensions of this glass are ten feet and a half broad by sixteen feet and a half high. At the foot of the glass is a richly ornamented couch or divan, for public use. The sides are protected by lions of cast iron, the size of life, placed on

pedestals of granite. Its centre division is surmounted by the imperial arms, and is decorated with flags. The entrances on either side have chandeliers in bronze and gilt, inlaid with crystals. The diameter of these chandeliers is six feet. The four main columns of the portico entrance are hung with carpets of various exhibitors from Anbnsson and Paris.

Along the entire length of the corridors, on either side, is space for exhibitors' goods, divided off by a light fencing of cast iron. Here are exhibited carpets of various kinds, and furniture in ebony and other woods—some of particularly light and fantastic design. The corridors are in some parts enriched with paintings, and at intervals are monumental mantelpieces in carved wood, bronze, and marble, which occupy the central space of the corridors, like trophies in the nave.

The French Exhibition generally will show a great advance upon 1851, and a considerable advance upon 1855. It is probable that the Treaty of Commerce will not have been without influence on this display. Many manufacturers who make no sign are those who, right or wrong, believe the treaty to be against their interests, while those to whom the treaty is undoubtedly beneficial have made the greatest exertions to be worthily represented.

About four thousand exhibitors have come forward from the empire and its colonies (the colonies claiming nearly a thousand), of whom nearly one half show under the head of raw produce.

The machinery section is well filled by at least seven hundred exhibitors, and manufactures are in the hands of more than fourteen hundred exhibitors. The whole display is remarkable for the number of collective exhibitions, especially in the wine and food class, more than forty of these being sent from various departments of the country. Amongst the special exhibitions are the forest products of the Landes; a collection of essays on the food of birds; a collection of French mammalia and birds both useful and mischievous; an exhibition of oak wood for ships; a geological and botanical collection; the results of the labours of the Society of Acclimatization; with a number of paintings of animals and plants for forage.

The agricultural implements of France are shown in a collective exhibition, and also the wines of Champagne and Burgundy, the wines and brandies of Montanban, and cereals and farinaceous grain. A collective display of ornamental and general leather-work is very interesting; the textile fabrics are rich and numerous; art-furniture, china, and glass fill prominent places; and the Gobelin and Beauvais tapestries have not been forgotten.

The French machinery, which is distinguished for its mechanical finish, includes all known types of machines. It has much beauty of form, and shows a judicious distribution of parts in relation to the strain to be supported. As regards vessels, the great marine engines used in the Mediterranean ships are also remarkable for the above qualities, and they include a direct application of the screw. The railway department presents some remarkable models of locomotives—the inventions of engineers whose object has been to utilize the adherence of the wheels on the curves, to increase the power of the steam, and to introduce largely the employment of coal as a combustile. The travelling carriages are more noticeable for their beauty than for the increased comfort which they promise to travellers.

Several improvements in boilers are exhibited, showing how these machines may be made so as to be easily taken to pieces and cleaned. The means are also

shown of purifying water from matters likely to form incrustations. The Giffard feeder, as a piece of ingenious mechanism, is, perhaps, the most striking invention of all.

The locomotives are numerous, and present many details worthy of the study of engineers.

The hydrauic machines show great progress since 1851, and also the ice-producing apparatus.

In mechanics and metallurgy there are some new improvements both in form and in construction; and some important machines are exhibited for making sugar from cane or beet-root on a large or small scale.

Belgium is well represented by a large collection spread through all the thirty-six industrial classes. It is strong in iron and textile fabrics; and while the Ministry of Public Works of Brussels has shown the mineral products of the country, about seventy-six apprentice schools have sent examples of cotton and linen manufactures. The Belgian Government also exhibits silk and velvet goods, and woollen and mixed fabrics, produced in the Flemish apprentice schools; and the show of Brussels lace is of course particularly attractive. Manufacturing machines and tools form a considerable part of this collection, and also machinery in general. The section of manufactures is particularly well filled by more than five hundred exhibitors. The food products form a large class, also the animal and vegetable substances; but the classes that are the best filled are those representing flax and hemp, and woollen and worsted manufactures.

The Austrian collection is furnished by about fourteen hundred exhibitors, who show in all the thirty-six industrial classes, and the strength of their display lies chiefly in the multiplicity of raw products exhibited.

The various kinds of coal found throughout the Austrian empire are represented by several complete collections, and also by some geological maps belonging to the Imperial Geological Society of Vienna.

Both table and rock salts (of which Austria produces four hundred thousand tons annually), as well as mercury, sulphur, and saltpetre, are exhibited from the Imperial mines.

Much interest will be excited by the collection of vegetable products; grain—of which twelve million six hundred thousand quarters are produced annually in the provinces—forming an important part.

Beet-root sugar is also another interesting feature of this section, as the hundred and ten millions of pounds that are manufactured yearly entirely supply the national demand for that commodity to the total exclusion of the colonial produced sugar.

The display of wines is another important feature, as the annual produce of Austria reaches four hundred and twelve millions of imperial gallons, and nearly all the provinces of the empire contribute to this department.

Specimens of flax, raw silk, and woods of all kinds are shown amongst the raw products, Austria producing annually of the latter two thousand four hundred and ten millions of cubic feet. Wool is another important national product, which amounts to seventy-seven millions of pounds-weight yearly.

Amongst the productions in Classes three and four Hungary holds the highest position.

The great distance has unfortunately prevented the transport of much machinery; nevertheless some of the Austrian exhibitors show to advantage in this branch. There is a locomotive exhibited which is made to be used only on mountains, having four cylinders, with a rate of speed equal to ninety English miles an hour. This is shown by the Staats Eisenbahn Gesellschaft.

The musical instruments are very fine, particularly those from Vienna, which are distinguished by their variety, cheapness, and good workmanship.

The woollen stuffs and cloths from Brünn and Reichenberg, which have already earned for themselves a good name at the Paris Exhibition of 1855, will now show what further progress has been made since that period.

In the iron industrial department Upper Austria stands prominent, knives, tools, and general cutlery being shown in a "collective exhibition."

Vienna sends a rich collection of her manufactures—works in leather, fashionable stationery, and turnery, most of which are already favourites in the London markets.

The Austrian exhibitors of paper will excite some attention, on account of the cheapness of their products; and the glass manufacturers of Bohemia, who have so long held such a high position in the commercial world, show the very decided progress which they have made in their particular industry.

The display in Class twenty-nine, made by the Austrian Government, faithfully represents the present state of public education in that country.

The result of the tour of the 'Novara' round the world is also exhibited; the beautiful anatomical preparations of Professor Hyrte; and the representation of human growth made by Doctor Littrazick.

The "Zollverein," or German Free-Trade Union, section includes a considerable collection of mining products from Prussia and other states, arranged in a systematic order. Amongst them is a pillar of rock salt from Stassfurth, near Magdeburg, remarkable for its purity and small degree of hygroscopical quality.

There is also a series of chemical substances and products, and amongst them the wines and wools are worthy of special notice.

The machinery and iron and steel manufactures include some remarkable castings from Krupp's factory in Westphalia, a cannon of cast steel from Westphalia, and a locomotive engine from one of the best workshops in Berlin.

Pantographs are also exhibited, which are used for executing "guilloché" works on printing rollers and copper plates; needle-pointing machines from Tserlohn, and philosophical instruments and apparatus from Berlin and Cassel (Electorate of Hesse). There is a good collection of arms and cutlery from Rhenish Prussia, and amongst them the sword presented to His Majesty the King of Prussia by Mr. Lueneschloss, in Solingen. A collection of models of ploughs of every century, from a professor of the Academy at Hohenheim (Württemberg), are very interesting.

Amongst the musical instruments is an orchestrion belonging to the Grand Duke of Baden, a number of pianofortes from Leipsic and Berlin, and a large number of harmoniums from Stuttgart.

Amongst the woven articles, the silk goods from Crefeld and Bielefeld take high rank, and form a most attractive show. Woollen and worsted, linen and cotton goods from the different States of the Zollverein, especially Prussia, Saxony,

and Württemberg, and likewise hosiery from the same countries, form a leading feature of this Exhibition.

The display of varnished leather work, principally from Mayence and Worms (Grand Duchy of Hesse), and Rhenish Prussia, is very important; and likewise the show of fancy leather goods from Offenbach (Grand Duchy of Hesse), Frankfort-on-the-Maine, and Berlin.

The exhibition of works in precious metals is very interesting. There is a splendid collection of chased and embossed silver works from Berlin, and amongst them the wedding present given to His Royal Highness the Crown Prince of Prussia and the Princess Royal by the city of Berlin.

Jewelry and ornaments in gold from Hanau (Electorate of Hesse), Pforzheim (Grand Duchy of Baden), and Frankfort-on-the-Maine are exhibited; the works in amber from the Prussian coast of the Baltic are very remarkable.

In porcelain, the royal manufactories at Berlin and Meissen (Saxony) send a rich collection of specimens.

The iron foundries at Berlin and Hanover send some large ornamental works in bronze, and two colossal couching lions come from the latter town to add to the effect of the German courts.

Amongst the industrial branches connected with science and art specimens will be exhibited from the printing-offices of Berlin, Brunswick, Gotha, and Leipsic; with globes and maps from different States of the Zollverein.

A good collection of photographs is exhibited, chiefly from Munich; and the portrait, life-size, is shown of His Royal Highness the Prince of Wales, taken on his journey to the Holy Land. Bavaria also sends a collection of very excellent drawing pencils.

Colours for printing and lithography are sent from Frankfort-on-the-Maine and Hanover; toys principally from the duchies of Saxony and the city of Nürnberg; clocks from the Grand Duchy of Baden, and straw plaiting from the Black Forest.

The models of the new exchange building at Berlin, the Derschauer railway bridge, and the sloping plain of the Oberlaendische Canal, in East Prussia, will be peculiarly interesting to architects.

The Zollverein exhibitors number about two thousand nine hundred, spread through the whole thirty-six industrial classes. The kingdom of Prussia claims nearly fourteen hundred of these exhibitors, and is particularly strong in the mining, chemical products, food, woollen manufactures, and hardware classes.

The first of the Hanse Towns—Hamburgh—exhibits soap, fancy models, philosophical instruments, furniture made of carved wood, basket-work and walnut-tree furniture, fancy furniture made of harts' horn, for sportsmen, and various folding beds, for railway travelling.

Bremen exhibits a friction balance, or frietiometer, for ascertaining the laws of friction and testing lubricating substances; some chased and embossed silver work, tea and coffee services in the gemine old German style, and silver table services.

Lübeck exhibits specimens of marchpane, a peculiar bread, and preserved food used much amongst sailors; the two Mecklenburgs exhibit a collection of raw products, of which wool is the staple; and Mecklenburg-Schwerin displays

some handsome inlaid work, and folding doors from the castle of the Grand Duke.

Russia is well represented in furs and cereals, and in a collection of minerals sent by one of the public administrations of the country. Amongst other curiosities it has sent a valuable seal-skin carpet. Its largest division of exhibitors show in the wine and food class, and in the class for animal and vegetable substances used in manufactures. Under machinery it has a good display of carriages, and its strong numerical point in manufactures will be found in the skins, furs, feathers, leather, and articles of clothing. It also sends a valuable collection of works in mosaic, marbles, "*pietra-dura*," paintings on china from the Imperial factory, and glass, plain, coloured, and jewelled. Most of the articles are luxurions and ornamental rather than useful, but they are of rare execution, value, and beauty. Two colossal china vases form part of the collection, on which have been copied, in a large size, a picture of Inigo Jones, from the original painting by Vandyke, and a picture of John Locke, from the original painting by Kneller. After the Exhibition, we believe it is the intention of the Emperor to present these vases to the Royal Society, and also to present a collection of precious marbles to the Geological Society.

Its exhibitors are spread over about thirty-four classes, and they number upwards of six hundred.

Italy is represented in a large and valuable collection, spread through all the industrial classes, with the exception of the one devoted to naval architecture. Its exhibitors number at least two thousand, and the display is particularly strong in mining and metallurgy, food and wine, vegetable products, and silk and velvet manufactures. The collection of pictures in embroidery is very rich and interesting; and the promise given at the Florence exhibition is more than redeemed.

The city of Rome shows through about forty-six exhibitors in eighteen industrial classes. The chief part of its display consists of natural and artificial stones for building decoration, inlaid stone tables, pavements, a few richly bound books, and some lace and tapestry made by the inmates of the state prisons. The photographs and specimens of silk manufactures are valuable and interesting.

Switzerland has nearly five hundred exhibitors, who make a display in about thirty-three classes. The food class is particularly well represented; and of course Class fifteen—horological instruments—is well filled, and by about seventy exhibitors. The show of silk and velvet goods by this country is rich and extensive.

Holland—or the Netherlands, as it is most frequently called—makes a good show, spread over about thirty-three classes. Its greatest division of exhibitors is in the food class; and it shows well in animal and vegetable substances used for manufactures, in paper and printing, in furniture, and in iron and general hardware. A collection of pipes and tobacco forms a noticeable feature in the display from this country.

Denmark is represented in about thirty-two classes by about three hundred exhibitors, who show well in raw materials and manufactures. It has sent a small collection of musical instruments, and another small collection of domestic and ornamental furniture. Amongst the clothing exhibited are some interesting Esquimaux dresses.

The strong point in the contribution from Sweden is the collection of woods and metals. Nearly half the exhibitors from this country—or two hundred and thirty—show under the raw material section. In cotton and woollen fabrics, and general hardware (under the head of manufactures), it makes a fair display; and also in agricultural implements and civil engineering.

Its exhibitors are spread thinly over at least thirty-four out of the thirty-six industrial classes.

Norway has sent a small but interesting collection, spread over about thirty-two classes. Its largest divisions of exhibitors are under the heads of mining and general manufactures. It shows very little in food, very little in machinery, except naval architecture and ship's tackle, but its manufactures, especially its articles of clothing, are fairly represented. Specimens of iron, copper, lead, and silver ores are sent, the latter from the government silver-mine of Kongsberg. In Class three some curious cereals from Finnmarken are shown, grown in the latitude of seventy degrees north; and in Class thirty-six are shown objects illustrating the life and industry of the Norwegian and Lapland peasants, and some carvings in wood.

Spain, as might be expected, makes the greatest show under the first section—that of raw materials—having about one hundred and fifty-six exhibitors of mining, quarrying, metallurgy, and mineral products, seventy or eighty exhibitors of animal and vegetable substances used in manufactures, and nearly six hundred exhibitors—or more than one-half of its whole number—who show food and wines. Its display, therefore, consists chiefly of wheat, fruits, oil, preserves, and wine, including wine made from dried grapes, and peculiar products, such as acorn coffee. In manufactures it has twelve exhibitors, who show cotton; in machinery it only numbers about thirty exhibitors, some of the classes, such as that for the machines and tools, having only one exhibitor.

This collection is scattered through about fifteen classes.

Portugal, like Spain, displays its strength in food and wine. In that class its exhibitors are over six hundred, or about three-fifths of its whole number. It makes a good show in the mining classes, and also in the animal and vegetable substances used in manufactures, particularly in woods. It shows wine, oil, cheese, cereals, poncho cloth—a peculiar production like blanketing—cotton fabrics, and silk fabrics, including a satin towel richly embroidered with gold. In Class thirty-six it has a good show of miscellaneous manufactures, such as straw cloaks, and wax flowers and fruits, and it spreads its collection over about twenty-nine classes.

Turkey is represented by its government, and a few private contributors, principally in a large collection which has been gathered by Mr. Hyde Clarke at the request of the Ministry of Commerce, and by the Governor-General of Turkey. The collection includes food, fruits, woods, wool, silver articles and filigree work from Thessaly; textile fabrics, silkworms' eggs, imported in large quantities to France and Italy; an alarm lock, which rings a bell when it is opened; and a copy of the Turkish national jest-book.

Egypt stands alone with a small and valuable collection, Tunis having refused to exhibit under the management of the Turkish Commissioners; and Guatemala, Ecuador, and Venezuela have each sent a late but interesting contribution.

Greece has sent, through about two hundred and fifty exhibitors, a collection

in which food and vegetable products stand prominent. The manufactured articles are not numerous, and the display altogether is in about twenty-two classes.

Costa Rica is represented by its government in ten classes. Its chief display is under the head of mining, chemical substances, food, raw materials used in manufactures, skins, and gold, silver, and filigree work.

The Brazilian collection includes oils, a great variety of native woods, vegetable products, the celebrated patchouli scent, a fine collection of minerals from the Imperial Museum, with photographs, oil paintings, silver work, and watchwork, and a valuable display of gold and diamonds.

The Imperial Government has spared no expense to make this collection large and perfect, and it has given instructions to the agents here to get a special report drawn up upon it by some eminent scientific writer.

Peru is represented by about thirty-eight exhibitors, whose display consists chiefly of silver, silver and plated articles, and mercury, wools, including alpaca, cotton, and wine. Amongst antiquities are shown some silver and other articles belonging to the ancient inhabitants of the country, and some blankets or coverlets made from cotton of great antiquity, which were recently found in the ruins of an Indian city.

The Oriental republic of Uruguay shows through about thirty exhibitors, who have sent specimens of wool, roots and skins, timber and wheat, lead, iron, copper and coals, with some wine and food, and a few coloured marbles.

The United States are represented by about sixty exhibitors in about twelve of the industrial classes. The most ingenious pieces of mechanism exhibited, are a machine for making tufted carpets, and one for setting up and distributing type.

The Japanese collection is large and particularly interesting, because it comes from a country about which very little is known. The works of industry and art in which the Japanese most excel are very varied. Many of them will not only bear comparison with the best workmanship of Europe, but in many points they cannot be rivalled. Manchester and Birmingham, London and Paris, will each find in a Japanese collection articles that either cannot be produced in their workshops, or only at a cost that would make them practically unsaleable. Many of these articles, however, with all their delicacy of workmanship and perfection of material, such as the finer kinds of eggshell porcelain, and china; the inlaid, enamelled, and chiselled metal-work; the crape silk fabrics, and the lacquered ware, are procurable in Japan, especially by the native purchasers, at very moderate prices. Others again are very costly, and can only be obtained at prices which in Europe would probably be thought far beyond their value. These are chiefly specimens of old lacquer, old bronzes—the finer kinds of ivory carving, swords, and armour, of which latter class the armed retainers of the Daimios, and the feudal chiefs themselves, are extravagant admirers and collectors. When wealthy they will give any price for an approved weapon by a maker of great repute.

As the object of this Japanese collection is to exhibit, as far as limits of space and means will allow, a fair sample of the Japanese, and their capabilities of production in rivalry with the nations of the West, all the articles selected will be found to throw some light on this question of competitive power of production as well as on the progress in civilization of a people who have been nearly wholly unaided by contact with the European race.

The various objects are thus classified :—

SPECIMENS OF LACQUER WARE.—Lacquering on wood; lacquer and inlaid woods mixed; lacquer on other materials, shells, ivory, tortoise-shell, &c.

SPECIMENS OF STRAW-BASKET WORK, and lacquer, and lacquer combined in articles of use and ornament; basket and ratan work.

SPECIMENS OF CHINA AND PORCELAIN of every variety, enamelled, lacquered, and plain; also of pottery, and quaint forms of earthenware.

SPECIMENS OF METALLURGY AND MINERAL PRODUCTS.—Bronzes, simple and inlaid with other metals; medallions and intaglios in pure and mixed metals; brooches, medals, buttons, &c.; cutlery and workmen's tools; arms and armour.

MANUFACTURES OF PAPER.—Raw materials; paper for rooms, for writing, for handkerchiefs, for waterproof coats, &c.; imitation leather.

TEXTILE FABRICS.—Silk crapes, silks, tapestry; printed cottons; fabrics from the bark of a creeper.

WORKS OF ART.—Carvings in ivory, wood, paintings, illustrated works, lithochrome prints, &c.

EDUCATIONAL WORKS AND APPLIANCES.—Books of science, scientific models and instruments (chiefly copied from the Dutch), Japanese shells, toys, &c., and a miscellaneous collection of specimens of lacquer ware, lacquering on wood, inlaid wood and lacquer mixed.

LACQUER ON THE MATERIALS, as ivory, shells, and tortoiseshell, &c.; and inlaid woods.

No exact list of exhibitors can be given here, but the articles number more than six hundred, the bulk of which have been gathered together by Mr. R. Alcock, C.B., Her Majesty's minister at the court of the Tyckoon.

The foreign display of paintings, drawings, engravings, sculpture, and intaglios is numerically as strong as the British exhibition. The space accorded to it, as we have before said, is equal to the British space, and is quite as well filled. Many visitors may be disappointed at not seeing numerous specimens of their favourite old masters; but they must remember that this is chiefly a fine art exhibition of the modern school, gathered from all the leading cities of the world.

France leads off with about two hundred oil paintings—specimens of the great French School by about one hundred and thirty artists; nearly forty water-colour pictures—the works of about twenty artists; fifty groups of sculpture, by about forty-four artists; and about one hundred and thirty engravings, lithographs, and architectural drawings. In oil paintings it sends six specimens of Paul Delaroche, five of Meissonnier, one of Doré in water-colour (the illustrations of Dante); and it may be said generally to be represented by about four hundred and twenty works of art by about two hundred and sixty artists.

Switzerland sends more than a hundred oil pictures by about fifty artists, amongst which are fifteen specimens of Jules Hébert, with a few pieces of sculpture and engravings.

Belgium contributes about one hundred and thirteen oil paintings by fifty-three artists, about twenty-six groups of sculpture by sixteen artists, and two engravings. It has sent nine pictures by L. Gallait and eight by Madou.

The great German school of painting is well represented by the Zollverein, and other German states. Prussia has sent nearly two hundred works of art in architectural designs, oil paintings, sculpture, and engravings, which are the productions of about one hundred and twenty artists. Berlin and Dusseldorf have each sent a fine collection of paintings, and the engravings from the former place

are choice and numerous. Amongst the sculpture from Berlin is a case of medals by Carl Fischer. Only one specimen has been sent of Peter Von Cornelius, and two of Oswald Achenbach; and amongst the oil paintings from Dusseldorf is a series of eleven pictures by Heinrich Mücke, representing the life of St. Meinrad. In sculpture Robert Cauer and Gustav Eichler have sent the greatest number of groups, and most of the works of art from Prussia generally are exhibited by the artists.

Bavaria has sent about forty-four works of art—chiefly oil paintings—by about twenty-seven artists, amongst which are seven pictures by Carl Wilhelm Müller. Saxony is represented by about twenty artists in thirty paintings, drawings, and groups of sculpture; the Grand Duchy of Baden has sent a small fine art collection; and the Duchy of Brunswick, Frankfort-on-the-Maine, the Electorate of Hesse, the Duchy of Saxe-Coburg and Gotha, and Würtemberg are represented by about forty works of art—the productions of about thirty artists. North Germany and the Hanse Towns have also sent a small collection;—Hamburgh having contributed about twenty works by about twelve artists. Amongst these are three pictures by F. Heimerdinger—one being a picture of fairy-life from a tale by L. Tieck, and three pictures by B. Mohrhagen.

The Austrian school—as it is called—is represented by about eighty oil paintings, sixteen water-colour pictures, nineteen pieces of sculpture, five engravings, and about ten architectural sketches. These are the works of about ninety-seven artists.

Holland exhibits about one hundred and twenty oil paintings by fifty-nine artists, and two engravings. Amongst the pictures are seven by D. Bles, and eight by P. Van Schendel.

The (so denominated) Spanish school is represented by about twenty-three artists and thirty works of art in oil-painting, sculpture, and engraving. Velasquez and Murillo are only represented by the engravers.

Russia sends more than a hundred works of art by about sixty artists. Eighty of them are oil paintings, five are groups of sculpture and medals, three are architectural sketches, and seventeen are engravings. Amongst them is a collection of forty-seven medals exhibited by the Academy of Fine Arts of St. Petersburg, and a monument representing the Empress Catherine II., by Felix Chopin. The earliest picture exhibited is one by Anthony Lodsuiko, who died in 1773; and there are seven specimens of Axenfeldt, and five portraits by Levitsky Demetrius.

Italy, as may naturally be expected, is well represented in the fine art classes. About forty architectural designs of various degrees of merit by about thirty artists, and eighty oil paintings and drawings by about sixty artists, form the display of pictures. About seventy groups of statuary and busts—some of them by English artists—have been sent in the sculpture class; and the engravings reach at least fifty, by about twenty-two engravers. G. G. Battista and Luigi Marchesi are represented by the most numerous specimens amongst the paintings; and the engravings include twelve plates by Luigi Calamatta of Rome, and some works by Giuseppe Longhi, Raffaele Morghen, and Leonardo da Vinci.

Rome has sent about fifty-seven pieces of sculpture by about thirty-six artists, including eight specimens of G. M. Benzoni; a great number of valuable cameos; a few fine drawings; a good many engravings; a small collection of medals; and a

large collection of mosaics by seventeen artists, including a contribution from the Vatican. Its oil paintings number about forty-five by about twenty-four artists,—chiefly modern painters.

Norway is represented by about sixty works of art by about twenty-one artists. Amongst some fifty oil paintings are nine specimens of Boe—pictures of flowers, fruit, birds, and jewelry—six landscapes by Gude, and eleven specimens of Tide-
mand—figure pictures, in two of which the landscapes are painted by the former artist. Several portraits in ivory are in the small collection of sculpture.

Sweden is represented by about forty works of art in oil painting and sculpture by about twenty-four artists. The rustic scenes of J. F. Häckert and Miss A. Lindegren are the most numerous amongst the pictures.

Denmark has sent about one hundred and ten works of art by about sixty-four artists, including six groups of sculpture by Thorwaldsen and five by J. A. Jerichan. Amongst the oil paintings E. Jerichan is the artist most largely represented.

For the first time in the history of all exhibitions Turkey fills a place as an exhibitor of pictures. Five paintings have been sent by M. Paul Musurus Bey, and they comprise portraits and sketches of still life. The artist, who is the son of the Russian Commissioner, is only twenty years of age, and therefore these works must be judged leniently.

Greece has sent two oil paintings, five groups of sculpture, and eight engravings—the works of about fifteen artists; and the Ionian Islands are represented by about twelve pictures—the productions of seven artists. The sculpture from Greece consists chiefly of statues by L. and G. Phytalae.

The American fine art display is small, numbering about a dozen pictures and engravings, the chief of which is Mr. Cropsey's "Autumn on the Hudson."

The articles—and groups of articles—exhibited throughout the building in the industrial classes have been estimated at one hundred thousand; the British fine art exhibitors at two thousand, and the foreign fine art exhibitors at about the same number.

The following is the list and plan of the foreign trophies which have been fixed in the building:—

After amusement and instruction comes a demand for refreshment, and Her Majesty's Commissioners decided that the public would be best accommodated if substantial food, including wines and malt liquors, as well as lighter food, were supplied during the Exhibition. With a view of suiting both foreign and British tastes, the refreshment department was thrown open to English and foreign contractors, the successful competitors being Messrs. Veillard and Co., of Paris, and Messrs. Morrish & Co., of Liverpool.

The following is the area of one section of the refreshment department:—

FLOOR.	Dining and Refreshment Rooms.	Kitchens.	Store Rooms.	Vestibules, Shafts, Stairs, &c.	Retiring Rooms.	Total.
	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
Upper Dining-rooms	5,510	450	..	1,515	195	7,670
Gallery Floor and Upper Mezzanine .	5,896	660	2,695	2,318	330	11,899
Lower Mezzanine	..	858	..	1,784	132	2,774
Ground Floor	10,125	858	..	3,284	430	14,697
	21,531	2,826	2,695	8,901	1,087	37,040
Total of both Sections, without including the cellarage . . }	43,062	5,652	5,390	17,802	2,174	74,080

A covered area of about twenty thousand square feet for cheap refreshments is set apart in each of the two annexes; and areas, amounting in the whole to one thousand square feet, for the sale of ices, tea, coffee, and light refreshments, are provided in each of the two divisions (east and west) of the main body of the buildings. Summed up, we have:—

Square Feet.
74,080
40,000
2,000
<hr/>
2) 116,080
<hr/>

And this gives, as the approximation of
each contract 58,040 square feet.

The object of the Commissioners being to secure a supply of good refreshments at moderate prices, and to provide that the sale of refreshments should not interfere in any way with the main purposes of the Exhibition, the conditions of the tender and the rules for managing this department were necessarily very stringent. The following are a few of the conditions, selected from more than thirty:—

Every tender must have annexed thereto a scale of charges in respect of the principal refreshments proposed to be served to the public by the person tendering.

No cooking apparatus can be allowed except gas stoves; and all apparatus or arrangements for the purpose of cooking, warming, or washing must be approved by the Commissioners in writing under the hand of their Secretary or General Manager, before they can be used, and may at any time be removed by them if found dangerous or inconvenient in the general arrangements.

An office must be provided by each contractor in one of his areas; and there shall be present there, on behalf of the contractor, at all times while his servants are in the building, a representative, with

whom any communications from the Commissioners may be left; and any notice or communication left at the office of the contractor shall be deemed to have been duly served on or made to the contractor himself.

The contractor and his servants shall be subject to all bye-laws and regulations that may be made by the Commissioners for the orderly conduct of the Exhibition, and of the persons employed therein.

Any servant of any contractor who may misconduct him or herself, by overcharge, incivility, or in any other way, shall be immediately discharged by the contractor, on his being required to do so in writing by the Secretary of the Commissioners.

The admissions into the building of servants and other persons on business connected with the refreshment department shall be regulated by the Commissioners; but no provisions or materials for cooking will be allowed to be introduced into the building, except between the hours of six and eight A.M., unless in special cases, and then only with the written permission of their General Manager.

No cooking will be allowed on the premises, except the cooking, by gas stoves, of dishes to be served hot.

The refreshment areas are to be kept open throughout the hours during which the public are admitted to the Exhibition; and the contractor engages to keep at the area let to him, on every day on which the Exhibition is open, a sufficient supply of all refreshments specified in the scale of prices, and to sell the same at the prices therein specified: such refreshments to be of the best quality.

The contractor shall exhibit copies in English, French, German, and Italian, each printed in specified colours, of the scale of prices in such places at or near his refreshment areas as the Commissioners may determine. Additions in writing to the list of refreshments, with the prices annexed, may be made from time to time. The cost of the attendance of waiters shall be included in the price of refreshments. A sufficient number of waiters, speaking the four above-named languages, must be provided, having distinctive marks on their collars, of colours corresponding with those of the scale of prices.

The contractor shall supply fresh filtered water, and, so long as the Commissioners deem it necessary, iced water, in glasses, gratis to all persons who ask for the same, at all times when the Exhibition is open to the public, in such manner as the Commissioners may require.

The Commissioners will not be responsible for any losses or damage which may happen to the property of a contractor from any cause whatever.

A few words about the three leading Catalogues will now close this long Chapter.

The Illustrated Catalogue of the present Exhibition is published by the direct authority and at the risk of the Commissioners, who will doubtless derive a considerable profit from it. It has been produced under the superintendence of Mr. Joseph Cundall. Each exhibitor is allowed two lines of description, and all matter beyond that, or space for woodcuts, is charged at the rate of five pounds per page for each edition of ten thousand copies. It will be issued in parts, and is meant to be something more than a pretty drawing-room book to please a few idle loungers before or after dinner. It is a work got up in a utilitarian spirit for the benefit of the exhibitors, and it will be a lasting and substantial record of the Exhibition.

The Illustrated Catalogue of the former display—brought out in a lump at the close of 1851—ran to four volumes of about six hundred pages each. The cost of the woodcuts was about six thousand six hundred pounds sterling, and of this the contractors, Messrs. Spicer and Clowes, furnished five thousand three hundred pounds, the exhibitors finding the other thirteen hundred pounds. The present catalogue will probably reach three large volumes of seven hundred pages each, and the exhibitors this time will contribute woodcuts costing at least from five to six thousand pounds. All the important trading and manufacturing firms have secured pages, and the volumes will be particularly rich in illustrations of machines. One eminent maker fills thirty pages with woodcuts and descriptions of cotton-spinning machines, showing the various processes, from opening the raw cotton to the final production of the web; two other makers have forty pages; and three

leading agricultural houses have taken forty-four pages between them, which they have filled with engravings of farming implements. The illustrations of pottery and works in the precious metals are of a very superior class. They have been produced under the care of Mr. P. H. Delamotte and Mr. Dudley, and it is certain that the part in which they will appear will be by far the most attractive. The purely advertising sheets in each of the parts are let at ten pounds for an inner page, twenty-five pounds for a page nearest the type, or for the last page, and fifty pounds for the back cover. These charges are based on a guaranteed circulation of ten thousand; and when the parts reach that number the advertisement will have to be renewed.

The Shilling, or General Catalogue, has been gradually built up under the superintendence of Mr. Sydney Whiting. The "editing" of this volume has not only involved drudgery unknown even to the sub-editor of a daily newspaper, but has required the faculty for arrangement, and a large store of miscellaneous knowledge. Wonderful specimens of French and German English were constantly dropping in, and the names and addresses of exhibitors, with the briefest possible description of articles to be exhibited (all confined, by official command, to sixteen words) were not always very easy to read. Of the difficulty of deciphering the handwriting of several of these correspondents many instances might be given more or less curious, but the following will suffice as a unique example of how wide may become the divergence from a supposition in reference to handwriting and the fact. The written words supposed to be "glass, china, and crystal," were so read, and placed in Class thirty-four, but were ultimately translated into "glacè, chinè, and cristallisé," referring to silk goods in Class twenty. Occasionally the slightest printed or written error in the formation of a letter might change an article which has absorbed perhaps years of labour into something for which the exhibitor has a profound contempt. The words "electric chain" passed muster through the hands of compiler, printer, and reader, but an accident made it appear that the article was an electric chair. The names of compound firms are troublesome when one partner has a surname like a Christian name, and Howell, James, and Co., if not so well known, might have been put James Howell and Co. Indistinct writing will convert the letter *u* into two *ll*'s, with the most ludicrous effect on certain names. We are all very sensitive about our names, whether we are celebrated as authors or inventors of a patent roasting-jack. It would, however, be ungracious not to admit that, generally speaking, the required forms have been correctly filled up, and all necessary information given with good-will and readiness; and we only refer to the foregoing facts to show the impossibility of excluding errors from such a compilation. The guaranteed edition of this catalogue is to reach two hundred and fifty thousand copies; its ordinary advertising pages are let at fifty pounds each; the page next to the type has been let for three hundred pounds; and the back page of the cover for five hundred pounds. The Shilling Fine Arts Catalogue—compiled by Mr. C. W. Franks—has the same guaranteed edition, and its advertising pages have been let at about the same prices.

INTERNATIONAL EXHIBITION OF 1862.

West Front — Main Entrance

SOUTH GALLERY IN PROGRESS.

CHAPTER XII.

THE BUILDING FOR THE EXHIBITION OF 1862.

WE have now to give a full and minute description of the buildings erected to contain this vast international display. These buildings—as half the world now knows, and as the Commissioners stated in a letter before quoted—have been designed by Captain Fowke, R.E., the engineer and architect to the Government Department of Science and Art, who was one of a committee appointed to superintend the construction of the whole of the works on the estate of the Commissioners of 1851, and was secretary to the British Department of the Paris Exhibition in 1855. While superintending the erection of the southern arcades, which he had planned for the Royal Horticultural Society's gardens, he carefully considered a design for a building on the Kensington Gore estate which should appropriately close up the open side of the great central square, and should provide ample space and protection for industrial displays as well as a noble gallery for pictures and engravings. This design was well matured

during the progress of the Horticultural Society's arcades, and was therefore ready to be submitted to the Royal Commissioners for the Exhibition of 1862 as soon as they were appointed.

On the arrangements for the ground being completed, the Commissioners therefore had before them a design founded on a large experience and an intimate knowledge of the site. As competition in the case of the 1851 Exhibition had only resulted in disappointment and delay, they carefully considered Captain Fowke's plans, and eventually accepted them, subject, however, to some modification on account of the cost of their execution, which was estimated at five hundred and ninety thousand pounds. The leading feature of the original design was the great hall, which was to have been five hundred feet long, two hundred and fifty feet wide, and two hundred and ten feet high. Its proposed position was immediately behind the central entrance of the south front, above which it would have towered. This feature, however, was suppressed on account of its cost; but there will be no architectural or constructive difficulties to prevent its being added subsequently should the Commissioners approve of it and the necessary funds be available.

The ground on which the main building stands is about sixteen acres in extent, and occupies the southern portion of the land purchased at South Kensington by the Commissioners for the Exhibition of 1851. It is nearly rectangular in shape, and it measures about twelve hundred feet from east to west, by five hundred and sixty feet from north to south. It lies immediately south of the Royal Horticultural Society's gardens, the southern arcade of which has been lent to the Exhibition Commissioners for refreshment rooms. The Cromwell Road forms the southern boundary, while on the east it is shut in by the Exhibition Road, and on the west by Prince Albert's Road.

The whole of this ground is covered by buildings of a permanent character, and to secure as much additional space as possible, the two long strips of ground between the east and west arcades and the adjacent roads are roofed in by means of temporary sheds, to give ample space for the exhibition of machinery and other large and heavy objects, which cannot be conveniently shown in the main building. The additional area afforded by these two annexes is about seven acres, which makes the total extent of the Exhibition buildings twenty-four and a half acres.

The general level of the ground is from four to six feet below the adjoining roads, and it has a gentle slope from north-east to south-west. The nature of the soil is well adapted to building purposes; a bed of gravel, from four to twelve feet from the surface, extends throughout the whole area, so that a dry and firm foundation is easily obtained.

The Commissioners for 1851, as before stated, are the legal proprietors of the site, but to secure the greater portion of it for the intended exhibition in 1872, they have agreed to reserve about sixteen acres of it for that purpose on receiving ten thousand pounds by way of ground rent. It is already agreed that a lease shall be granted to the Society of Arts of the central portion of the picture gallery, one acre in extent, along the Cromwell Road, for ninety-nine years, on condition that ground rent to the amount of two hundred and forty pounds per annum be paid to the 1851 Commissioners, and that the building be given up unreservedly for the use of the exhibition in 1872.

In the general design of the building, a ground plan of which is given, its suitability for future international exhibitions has been kept steadily in view, and it has a much more permanent character than the famous Crystal Palace erected for the exhibition in 1851.

Glass and iron are no longer the main features of the design, but are succeeded by lofty walls of brickwork, which surround the ground on all sides, and form the walls of the fine arts galleries. The east end and west sides, by being continued past the southern arcade of the gardens, have a frontage of seven hundred and fifty feet, and the frontage on the south is eleven hundred and fifty feet. The north front is the lower arcade of the gardens, which has had a permanent upper story added to it. The interior space thus enclosed is entirely covered in by roofs of various heights, and is divided into nave, transepts, aisles, and open courts; the latter, occupying comparatively a very small portion of the space, are roofed with glass as in 1851, but the other parts have opaque roofs, and are lighted by clerestory windows.

The interior supports are hollow cast-iron columns, as in 1851, of somewhat larger dimensions, being a foot wide, with an inch of metal in them. They are so arranged as to come at intervals of twenty-five or fifty feet from centre to centre; in fact, twenty-five is the unit here as twenty-four was in 1851, and nearly all the leading dimensions, both vertical and horizontal, are multiples of that number. The exceptions to this rule are the nave and transepts, which are eighty-five feet wide; the former runs east and west, and terminates in the centre of those fronts, having its central line eighty-one feet north of the centre line of the building; the latter extend north and south from the ends of the nave throughout the whole width. At the intersection of the nave and transepts are the great domes. The aisles are continued all round the nave and transepts, and the space enclosed by them forms the open or glass courts.

The columns are not supported as they were in 1851. On that occasion they were attached to connecting pieces, which, terminating in a large flat base plate, rested on concrete laid flush with the ground: these connecting pieces of course varied in height to suit the slope of the ground. This plan has been avoided in the present building by bedding the columns themselves on York slabs laid on brick piers, which are founded on concrete; the slabs being all adjusted to the same level throughout by varying the height of the brickwork, only one length of column is used, and the facility of setting them up is thus greatly increased.

The total area roofed in is nine hundred and eighty-eight thousand square feet, or sixty millions of cubic feet; it is therefore considerably larger than the covered part of the 1851 Exhibition, which only occupied seven hundred and ninety-nine thousand square feet. It has also, when actual covered space is alone considered, slightly the advantage of the Paris Exhibition, which had a covered area of nine hundred and fifty-three thousand square feet. If, however, we compare the total space, covered and uncovered, occupied by each, Paris is considerably larger, for the more favourable character of its climate for out-of-door display enabled the authorities of that exhibition to increase the area of ground given up to exhibiting space by five hundred and forty-seven thousand square feet, while, with our variable climate, it has not been thought advisable to have more than thirty-five thousand feet of ground unroofed. The total areas, covered and uncovered, occupied by the two

exhibitions are one million five hundred thousand square feet for Paris, and one million twenty-three thousand square feet for 1862.

The French Exhibition therefore considerably exceeded ours in size, but it was not nearly so compact in form, and its temporary annexes made up a very large portion of it, occupying six hundred thousand of the nine hundred and fifty-three thousand square feet, while our two annexes do not amount to more than one-third of the total area.

The plans of this huge building, as before stated, were submitted to ten leading contractors: three tenders for construction were sent in, and that furnished by Messrs. Kelk and Messrs. Lucas for the modified building, being the lowest, was at once accepted.

These two eminent firms joined their resources together, and became partners in the work.

The nature of the contract was peculiar. The whole responsibility for the execution of the works rested with the contractors, and the amount they are to receive is contingent on the receipts of the exhibition. The Commissioners have the option of purchasing the building out and out, or of merely paying for the use of it. For the rent of the building a sum of two hundred thousand pounds is guaranteed absolutely; if the receipts exceed four hundred thousand pounds, the contractors are to be paid one hundred thousand pounds more for rent, and if the sum is fully paid, then the centre acre of the great picture galleries is to be left as the property of the Society of Arts. The contractors are also bound, if required, to sell the whole for a further sum of one hundred and thirty thousand pounds, thus making its total cost four hundred and thirty thousand pounds.

All proceedings were submitted to Captain Fowke, R.E., who acted for Her Majesty's Commissioners. He conferred with a Building Committee, consisting of the Earl of Shelburne, Mr. W. Fairbairn, and Mr. W. Baker; and the Commissioners reserved to themselves the final approval of everything. Captain Fowke was assisted by Captain Philpotts and Lieutenant Brooke, and certain non-commissioned officers of the Royal Engineers. The date agreed upon for the building to be completed and given up by the contractors was the twelfth of February, 1862, and on that day, although much of the decoration, many of the minor details, and part of the western dome had not been completed, the Commissioners took formal and practical possession of their property. The galleries and stairways had been previously tested by a body of four hundred men marching over them, and the greatest deflection of the iron beams was only one-eighth of an inch, and of the iron and wooden trusses only three-eighths to five-eighths of an inch. The following report on this subject was addressed to Her Majesty's Commissioners by the professional members of the Building Committee:—

MY LORDS AND GENTLEMEN,

FEELING that it would be a source of satisfaction to the Commissioners, as well as to ourselves, as members of the Building Committee, and also a due precaution for the public safety, that the gallery and other floors of the International Exhibition Building at South Kensington should be thoroughly proved, we undertook a series of experiments on Monday last.

We have to report that, in carrying out these experiments, the various floors and stairs were put to a more severe test than they would be subjected to with the largest number of people that could possibly be assembled upon them at any other time during the Exhibition. The result of these experiments fully

bears out our calculations on the strength of the different parts of the structure, and we feel perfectly satisfied as to the stability of the building for the purpose for which it was intended.

The two large domes, in the strength of which we have taken great interest, were eased from their temporary support last week, and no observable settlement took place.

The following are the particulars of the tests:—The first caused a large body of men, about four hundred in number, to be closely packed upon a space twenty-five feet by twenty-five feet, on one lay of flooring; we then moved them in step, and afterwards made them run over the different galleries and down each staircase; at the same time we caused the deflections of the girders carrying these floors to be carefully noted at several places, and had the satisfaction of finding that, in each case, the deflections were very nearly the same, thus exhibiting a remarkable uniformity in the construction. The cast-iron girders, with twenty-five feet bearings, deflected only one-eighth of an inch at the centre, and the timber trussed beams of the same bearing placed between these girders deflected half an inch at the centre. In every instance the girders and trusses recovered their original position immediately on the removal of the load.

We are, my Lords and Gentlemen, yours faithfully,

WILLIAM FAIRBAIRN, C.E.

WILLIAM BAKER, C.E.

London, Feb. 13.

The general outline of the south front presents an elevation eleven hundred and fifty feet long, and fifty-five feet high in the brickwork, with two projecting towers at each end, rising sixteen feet above the general outline, and a larger tower in the centre, in which is the main entrance to the picture galleries. Semi-circular headed panels, separated by pilasters, are built at central intervals of twenty-five feet throughout the whole length; a high plinth extends all round, and between the arches are circular niches. In the lower portion of each panel is a window, to admit light and air to the ground floor, and to ventilate the picture gallery above.

The exterior is chiefly built in plain brickwork, and with no more ornament than such work admits of. The panels are plastered in cement, and it is proposed to ornament them with English mosaics. The exterior decoration will eventually depend on the funds, and the way in which they are applied. At present the building is very incomplete in external ornament, but any amount of architectural beauty that can be paid for may be added hereafter. The Exhibition Charter provides that fifty thousand pounds shall be spent in the architectural completion of the central portion of the building out of contingent profits.

The two great domes, being each three hundred feet from the south front, can never in any way enter into its effect. If the middle hall, with its great central dome, should ever be built, then the Cromwell Road front will not be without this ornament. Each dome keeps its place as the centre of its own front, and its effect is utterly independent of its fellow, which is one thousand feet from it. The upper terrace of the Horticultural Gardens is the only point from which the two present domes appear simultaneously; and when thus viewed, so completely does the building carry on the symmetrical lines of arcades and terraces, that the duality of the domes is at once accepted as the natural complement of the system which has governed the laying out of the entire quadrangle.

The main entrance to the southern portion of the building is through three arches in the central tower, twenty feet wide and fifty feet high, resting on piers fourteen feet thick, decorated with terra-cotta columns. Above the arches is the cornice and frieze, on the top of which, and above the middle porch, is an ornamental clock dial. Passing through the archways, the visitor enters a large vesti-

bule and hall, one hundred and fifty feet long and one hundred and ten feet wide, leading to the industrial courts and galleries; and a flight of steps on either side, twenty feet wide, conduct him to the picture gallery.

The chief requisites in a picture gallery are a solid building capable of resisting every change of weather, well ventilated, and an equally distributed light throughout, admitted in such a way as will prevent its rays being directly reflected from the surface of the picture to the eye of the visitor. A light, therefore, satisfying this condition when the observer is standing at a convenient distance, is the only one which can be called perfect.

No one can have observed pictures lighted by ordinary windows without experiencing the unpleasant effect produced by the improper reflection of the rays, or glitter from the pictures, as it is called. It is for this reason that one is often puzzled where to find a place from which to see the whole of a large picture to advantage. This defect exists in many of the finest galleries, both in this country and on the Continent, and the result is that some pictures can scarcely be seen at all, while others can only be observed from one or two points, which are always more or less crowded, according to the merits of the subject.

This is obviated by admitting the light at a particular angle from the roof, by means of a skylight extending along its entire length, and which, in the present case, measures thirty-one feet in width, that is, fifteen feet six inches from the ridge on either side. The entire width of the opening, measured on a horizontal plane, is twenty-nine feet two inches. Each room is fifty feet wide, and at a height of thirty-two feet nine inches a cove, springing from a cornice on either side, reaches the height of the tie-bar of the principals (forty-two feet ten inches above the floor), twelve feet four inches from the wall, thus leaving a space twenty-five feet four inches between the coves. In this space a transparent calico ceiling (hereafter to be replaced by ground glass) is introduced, which, however, is raised two feet four inches above the highest point of the cove, or forty-five feet seven inches from the floor. The space between the highest point of the cove and the eave of the calico is occupied by louvres for ventilation.

These proportions give the gallery as much light as possible, and glitter from the surface of the pictures is avoided. As regards the quantity of light admitted, it may be briefly stated that the opening for admission is exactly half the floor area of the gallery, the former being twenty-five feet wide, the latter fifty. In dealing with the quantity of light, another important point must not be lost sight of, namely, the height of the opening from the floor, and its consequent distance from the picture. In this gallery this is reduced to a minimum consistently with the avoidance of glitter, being only forty-five feet seven inches from the floor.

The following illustration will explain the question of glitter, or reflection of light, from the varnish of pictures:—Supposing a mirror to be hung against the entire surface of the wall. It will be seen, by referring to the diagram on the opposite page, that a ray of light from the skylight, at its extremity furthest from either wall, striking that wall at A, at a height of twenty-three feet three inches above the floor, will be reflected so as to reach the eye at E of a beholder (say five feet three inches above the floor) standing five feet on the other side of the centre of the room, or thirty feet from the mirror, and, consequently, all the rays striking below that point will fall below his eye; or, in other words, he will not be able to

see the image of the skylight in the mirror at any point below twenty-three feet three inches from the floor, and, as a matter of course, there will be no glitter on the wall, or on pictures hung against it, below that point. Consequently, to see pictures without glitter hung higher up, it will be necessary for the spectator to retire still further from the centre of the gallery.

Transverse Section of Picture Gallery, showing the way of admitting the light to avoid glitter.

It will be seen from the diagram that this point, which is called the glitter point, alters with the position of the beholder. For instance, at E, five feet from the wall, the glitter point is at F, eleven feet from the floor, while, on coming closer, it will descend in proportion. On the other hand, by receding to a distance of ten feet, the wall may be seen without glitter to a height of fourteen feet. Looking again to the same diagram, it will be seen that, apart from all considerations of reflection, a person desiring to see a picture at a height of fourteen feet would naturally retire ten feet, if not more, from it; and the same may be said of the other heights and positions shown on the sectional diagram, so that in any position in which a person can conveniently examine a picture he may be sure of having its surface free from glitter.

This system of lighting increased the difficulty of successfully treating the exterior of the building, for it prevented any windows being placed in the upper part of the side walls; but after the very successful application of these principles of lighting to picture galleries which have been constructed within the last few years at South Kensington, it was wisely determined to forego all other considerations, and apply the same principles to the rooms destined to receive the choicest works of art of the present age.

On ascending the stairs the visitor enters a vestibule of similar proportions to the one below, from which he obtains one unbroken vista throughout the whole extent of the main gallery. This gallery is about as long as the Louvre at Paris.

Entering the first room on either side, he finds himself in a spacious hall, three hundred and twenty-five feet long, fifty feet wide, and forty-three feet high. Passing through this, he enters one of the wing towers, which forms a room fifty-two feet by forty-five feet, and sixty-six feet high; he then enters another

room seventy-five feet long, and of the same width and height as the first, from which he may pass into the end tower, whence he will have another uninterrupted view of the whole main gallery.

The interior architectural decorations of these rooms are very simple, and may be briefly described as a plain cove extending to each side of the skylight, and resting on a moulded cornice.

Arrangements for thorough ventilation, so essential to the preservation of the pictures and comfort of the visitors, are amply provided for by admitting fresh air through apertures along the floor level, and allowing the vitiated air to escape through louvres in the skylight.

Descending to the ground floor, the same sized rooms are repeated; but as they are lighted by means of ordinary windows, they will be devoted to other objects than those coming under the head of Fine Arts. The part of the picture gallery which is to revert to the Society of Arts is the central hall and the two large rooms, three hundred and twenty-five feet long, on either side of it. The area of the south picture galleries, including the staircase, is sixty-three thousand nine hundred and twenty square feet; and the area of the east and west picture galleries is twenty-seven thousand square feet.

So many erroneous ideas have existed on the Continent respecting the space devoted to the fine arts in this exhibition, especially in comparison with the space in Paris in 1855, that it seems very desirable to correct them. A writer in the 'Athenæum' last year said: "The building for the fine arts in England is of a far more substantial character than that in the Allée Marbœuf. The one is of brick and iron, intended to be permanent; the other was of timber and plaster, and only temporary. On this account, if on no other, there will be much less space in England than in Paris. According to official documents, the Rez de Chaussée, in Paris, devoted to oil pictures only, contained twelve thousand five hundred and three square mètres of hanging space, or about one hundred and seventy-one thousand six hundred and thirty-three square feet, of which France, according to the account of 'Prince Napoleon's visits,' retained seven thousand four hundred and forty-five square mètres, or full three-fifths. The upper gallery at Paris contained about three thousand one hundred square mètres, of which France retained four-fifths. In England, the whole space devoted to the fine arts, including staircase, contains only ninety thousand nine hundred and twenty square feet of hanging space, or little more than half that in Paris; and this England equally divides with foreign nations, retaining only forty-five thousand four hundred and sixty square feet, or exactly one-half. England asked in Paris for twelve thousand square feet of wall space for paintings in oil and water-colour engravings and works of architecture; and, according to Mr. Redgrave's accurate report, occupied ten thousand four hundred and ninety square feet, being considerably less than one-sixteenth of the whole French space. France has been accorded ten thousand square feet of space for 1862, which is more than one-tenth of the whole space for the fine arts. And when it is remembered that she has no school of water-colour painters to provide for, the proportion in her favour is still greater. In 1855, England took a small side gallery, whilst the large saloons were appropriated by France and other continental nations. In 1862 all the space will be equally excellent, and equally divided, not only as to area, but as to the nature and structure of the

galleries, between England and the countries she has invited. Moreover, the United Kingdom is to be represented by the works of a hundred years, whilst in France the works were those of living artists."

Before concluding the description of the picture gallery, it may be interesting to add its constructive details. The foundations throughout are carried down to the gravel, here from six to twelve feet below the surface of the ground, in concrete, on which ordinary brick footings are laid. In the front wall the piers carrying the semicircular arches are twelve feet wide by three feet two inches thick, and the intervening panel having merely its own weight to support, is only nine-inch work. The back wall is of rather a different construction. This is a plain wall from top to bottom, with numerous arches through it on the ground floor; it is built for the most part hollow, with piers so placed that the weight of the floor and roof will come on them. This system of hollow walling gives the greatest strength with the least amount of material, and secures a straight face at either side. The floor of the picture gallery has been constructed of great strength, so as to bear with perfect safety the greatest load which can be brought on it. It is carried on girders thirteen and a half by twelve feet, resting on the side walls and immediately supported by two cast-iron columns. These girders cross the building at central intervals of twelve and a half feet, and over them are laid joists about thirty-six feet by about eight feet four inches, two feet apart, to carry the floorboards. A portion of this floor has been proved to one hundred and forty pounds to the foot, which exceeds the greatest load it can have to bear when densely crowded with visitors. The walls in the Picture Gallery are lined throughout with wood, which is kept at a short distance from the brickwork, so as to guard against damp. The design of the roof is the same as that already employed by Captain Fowke in one of the South Kensington galleries, and also in the Irish National Gallery in Dublin, and seems well adapted for its purpose; the principals which support it consist of two strongly trussed double timber rafters, connected by an iron tie-bar four feet above the level of the wall-plate. The coved ceiling is thus made four feet higher than it could have been with an ordinary tie-beam roof.

The principals are placed at central intervals of twenty-five feet; they rest on flat stones built into the walls, and strongly trussed purlins, carrying the skylight rafters and upper portion of the cove, are suspended to them. The skylight is glazed with sixteen-ounce glass, and the rest of the roof is covered with slates.

The east and west fronts, though differing from the south, are not less imposing. They are in all respects similar to each other in their general effect. Here the huge domes, rising to a height of two hundred and sixty feet, show to most advantage, and the transept roof, with its lofty clerestory windows, is in full view. To the observer below the form of each dome appears nearly that of a semicircle: this effect is obtained by making its height eleven feet more than its semi-diameter, which fully allows for the loss by perspective diminution.

From the crown of each dome rises the finial to a height of fifty-five feet. Each dome is in the middle of each façade; its centre is the point formed by the intersection of the centre lines of the nave and transepts, and the front of the building is advanced from it one hundred and eight feet. Under each noble arched recess is the main entrance to the industrial courts, the effect of which forms one of

the most pleasing exterior parts of the building. The porches are each one hundred and sixty-two feet in extreme width, and they each contain a deep semicircular arched recess of sixty-eight feet span and eighty feet high, with a deep covering, capable of receiving an almost endless variety of decoration if such be desired hereafter.

In the tympan of the recess is the great rose window, which will be visible from end to end within, the window in one closing the vista as the spectator looks from a standing point beneath the other. Minor porches on either side, thirty-six feet wide, forming wings, support a pedimental gable, which rises to a level with the ridge of the nave and transept roofs, and is finished with a bold line of balustrade. The entrances beneath are enclosed by an arcade framing filling up the recess for one quarter of its height, and having a balcony above. The flat brickwork of the wings is relieved by pilasters, one on each side of the minor porch; these carry a light cornice moulding, surmounted by an attic.

On either side of the central entrance, recessed fifteen feet from it, the exterior walls of the building extend two hundred and thirty-five feet to the north and south; these enclose the auxiliary picture galleries. There is a high plinth from end to end, and immediately above are panels formed by a series of coupled semicircular arched recesses, with bold pilasters between. Over all is an appropriate cornice, supported by corbels. By the wall being reduced to the height of thirty-six and a half feet, the lofty clerestory windows of the transept, which rise immediately behind, come into the composition. As in the south front, the lower portions of the panels are occupied by windows to give light and ventilation to the offices and retiring rooms, with which the ground floor on these sides are occupied. The upper floor is used as an auxiliary picture gallery, and is therefore lighted on the same principles as the rooms on the south front.

A visitor can enter the auxiliary galleries, independent of the main gallery, by means of stairs on either side of the east and west entrances; or he may have access to them from the end towers of the latter, already described. They form four distinct rooms, two hundred and forty-seven feet long, twenty-five feet wide, and seventeen feet high. The same principles of lighting and ventilating being observed in these galleries as in the larger one, their construction is similar, subject, of course, to the alterations rendered necessary by their smaller size.

The main and auxiliary picture galleries of the fine arts department afford four thousand six hundred lineal feet of hanging space, from seventeen to thirty feet high; yet all this amount, large as it may seem, is required, and even more would have been desirable could it by any possibility have been obtained. An idea of their extent may be formed by the fact that, in walking once up and down the galleries, the visitor will have to traverse a mile all but sixty yards; and, presuming the moderate allowance of seventy-five per cent. of the available wall space to be actually covered by pictures, the aggregate area will equal seven thousand six hundred square yards, or about one and a half acres.

To complete the survey of the exterior, we must examine the north front, for which purpose it is necessary to enter the Royal Horticultural Society's gardens. The large space here afforded admits of a connoisseur criticising the building from several points of view. For our purpose, however, it will suffice to imagine

our station to be on the central walk, one or two hundred yards from the south arcade.

From no other point can a better view of the building be obtained. The south arcade forms the basement of the north front, to which an upper story has been added. The façade is divided into two floors, except the central portion, which has a mezzanine interposed. The ground floor, consisting of the southern arcade of the gardens, with its pleasing arrangement of twisted terra-cotta columns, is doubtless familiar to many people. The whole front is divided into five façes, in different lines of advance. By subdividing the centre mass into three sections a very great variety and relief of design is obtained. The middle of the front is occupied by the entrance from the gardens, through three ten-foot ornamented brick archways, supported by coupled stone columns; these are immediately opposite the southern entrance, from which point will be obtained one unbroken vista across the whole building up to the cascade and conservatory at the north end of the gardens.

In examining the five divisions of the façade, we find that the centre (seventy feet high) presents three levels,—the arcade of the gardens, the shallow mezzanine (interrupted by the central arches before mentioned), and the upper floor. On each side of the centre are the lights of the arcade, consisting of tripled ornamental brick arches on terra-cotta columns, separated by pilasters; the upper lights are similarly arranged, and the whole is surrounded by a panelled frieze of appropriate design, with openings for ventilation. Over this is seen the roof, of good pitch, following the line of the ground plan.

The two corresponding recesses on each side are thrown back twenty-five feet, and extend in an unbroken line for two hundred feet, with a height of sixty feet: the level of the upper floor here corresponds with that of the centre mezzanine, and the lighting, both above and below, is effected by eleven sets of tripled arches, similar to those in the centre division.

At each end are the returns into the garden; and in the fifty feet which completes the length is an entrance archway, ten feet wide, on the far side of which the tripled arched light is repeated.

The upper and lower floors on this front occupy an area of twenty-six thousand eight hundred square feet: the whole of this space has been given up to the refreshment rooms and offices connected with the Exhibition.

No matter what may be the financial results of the great display, these rooms at least will remain after its close, and form part of the Horticultural Gardens.

In making a survey of the interior, it is hardly necessary to go minutely into the construction of the whole, and we shall therefore only dwell on those parts which present any novelties. It would be unprofitable to do otherwise, for there are certain portions which differ in no essential from many ordinary iron structures. The nave and transepts are similar in all respects.

Entering by the east or west front, the visitor ascends two steps until he comes to the level of the dais under each dome. From this point, six feet above the rest of the floor, he may in one view command the interior of the whole building. A very serious defect in the ground has been remedied by this arrangement. The roads surrounding the site are about five feet above the level of the ground on which the building stands. Had this contour been rigidly followed, the visitor on entering would have gone down into a pit.

This immediate descent, apart from its inconvenience, would have totally marred the interior aspect of the building. Had the whole area been raised to suit the road level, it will be obvious that the cost would have been considerably increased. From the daïs three flights of steps, eighty feet wide, conduct the visitor into the nave and transept on either side. The nave is eight hundred feet long, eighty-five feet wide, and one hundred feet high to the ridge of the roof.

Section of one-half of a Nave Rib, showing the cross-bracing in the Gallery.

The supports on either side consist of square and round cast-iron columns, coupled together ; the former carry the gallery floor, and the latter, advancing into the nave, receive the principals of the roof. These columns are fifty feet high, in two lengths of twenty-five feet each, and from their capitals spring the roof frames, which consist of three thicknesses of plank, from eighteen inches to two feet six inches deep, firmly nailed and bolted together, and so arranged that their ends break joint. The centre plank is four inches thick, and each of the outer ones is

three inches; the lower edges are tangents to an imaginary semicircle, round which they form half of a nearly regular polygon. From the springing rise the posts of the clerestory windows, twenty-five feet high. The principal rafters of the roof frames rise from the top of these posts, and are carried up, after passing a tangent, to the back of the arch, to meet at the ridge in a point twenty-five feet above the top of the clerestory. The angles over the haunches and crown of the arch are firmly braced together, so as to reduce the thrust as much as possible.

TRAVELLING SCAFFOLDING.

The rib is repeated thirty times in the length of the nave, and from its graceful curve and lightness it produces a fine effect. Between every roof principal is a clerestory light twenty-five feet high, consisting of three arches springing from intermediate mullions. The roof is covered with felt and zinc, on one and a half

inch plank, which is laid diagonally, so as to brace the whole together. The nave is therefore entirely dependent for its light on the clerestory windows; but this arrangement is found to be satisfactory, and a substantial water-tight covering is thus insured, having the advantage of obviating all chance of that unpleasant glare which the experience of 1851 proved to be unavoidable with a glass covering. The building at the same time is thus made cooler in summer and warmer in winter than a simple glass structure. The rain-water from the roof is conducted, by means of gutters, down the columns supporting the ribs to drains laid under the ground floor, which carry it off to the drains under the adjoining roads.

The transepts run from each end of the nave, at right angles to it, and extend north and south for a length of six hundred and fifty feet. They are the same width and height as the nave, and the ribs of its roof are of precisely the same construction. This construction will be more fully understood by referring to the drawing on page 138, which shows the arrangement of planks and bracing.

The nave ribs were made at Mr. Kelk's yard in Pimlico, and carted to the ground in four pieces. When on the spot ready for hoisting, they were formed into two pieces, so arranged that the point of junction should always be at the ridge. To fix the principals in the nave roof, a movable scaffold of very clever design was used. A drawing of it, showing its construction, is given in page 139. It contained four thousand seven hundred and forty cubic feet of timber, and weighed one hundred and forty tons; but, notwithstanding this, it was moved by four men working crowbars under the wheels. One half of a rib was first hoisted to its place; when in position the other half was raised, and as soon as both were fixed true, they were joined together by completing the arch and bracing over its crown. As soon as one rib was up the travelling scaffold was moved to the adjoining bay, and the next rib completed. The purlins and boarding were then fixed, after which the scaffold was again moved forward, and another bay covered in the same manner. When Mr. Crace's workmen came in to paint the roof, this scaffold was enlarged for their use until its weight reached two hundred tons.

The hoisting was all done by a most ingenious winch, or hoist, worked by steam, the invention of Mr. Ashton. This machine has two grooved cast-iron barrels, which are made to revolve by means of a system of toothed wheels connected with a portable steam-engine. A rope is passed round the grooves. On the fall being manned and the barrels set in motion, the coils of the rope are gathered up, and a great hoisting power obtained. By means of snatch-blocks and pulleys ropes were led from this simple machine to all parts of the building, and the heaviest materials, such as girders, columns, scaffold beams, &c., were hoisted to their position with the greatest ease and rapidity. As an instance, we need only mention that the heavy floor girders, weighing about one ton and a quarter, were raised in two minutes, each of the columns in about the same time, and the ponderous ribs of the nave, weighing six tons and a half, required only from ten to twenty minutes to raise them their full height.

The only portion of the Crystal Palace of 1851 which can be compared with the nave is the great central transept, the height of which was one hundred and eight feet, or four feet more than that of the nave; but it was narrower by thirteen feet, being only seventy-two feet wide, while the total length of the nave of the present building is very nearly three times as long.

The ribs of the transept were fixed over a standing scaffold all through, which alone consumed thirty thousand three hundred and thirty-six cubic feet of timber. The reason for this was, that as the domes divide the transepts into four separate lengths, four travellers would have been necessary, and though these would not have taken nearly so much material as the standing scaffolds, yet the contractors thought that the difference would not have compensated for the additional labour required in building the former.

STEAM HOIST.

The general plan shows three large buildings parallel to each other,—the refreshment rooms, the nave, and the picture gallery. These are connected at their ends by transepts, and thus two vast oblong spaces are enclosed, one to the north and the other to the south of the nave.

On both sides of the nave and the inner sides of the transepts are aisles fifty feet wide. Another aisle, twenty-five feet wide, is carried along the outer sides of the transepts, and along the back wall of the south front.

After deducting the space occupied by all these aisles from the oblongs above referred to, we have remaining two smaller ones, that north of the nave, seven hundred and fifty by eighty-seven feet, and that at the south of it, seven hundred and fifty by two hundred feet. Each of these is subdivided into three courts by two fifty-feet aisles. The centre courts are one hundred and fifty feet long, and those at the ends two hundred and fifty feet. The dividing aisles on the north lead to the refreshment rooms, on the south to the entrance vestibule.

Twenty-five feet above the ground floor are the galleries, following the same line as the aisles; they give an additional exhibiting space of two hundred and eight thousand square feet. Particular care, as the testing has shown, has been taken to make these galleries amply strong for the heavy moving loads they may have to bear. The floors are supported on cast-iron girders fixed to the columns; over them are laid two strong suspended trusses, which carry the joists and boarding.

Supposing a floor to be loaded with one hundred and forty pounds to the square foot, which, being more than the weight of a dense crowd of people, is heavier than any weight it can have to bear, the greatest load that can thus be placed on a girder is thirty-four tons. The breaking weight of the girders used is eighty-eight tons, and every one of them was proved in an hydraulic press, specially constructed for the purpose, to a load of thirty-eight tons, to avoid all risks of bad castings being used. Over each gallery is a flat roof covered with felt, supported like the floor, but of much lighter construction. Sixteen flights of steps, ten feet wide, give ample means of ascending from the ground to the upper floor.

The galleries play a very important part in the construction of the building; they are made to form an abutment to the nave and transept roof, and the particular form of bracing by which this is effected is the ingenious suggestion of Mr. Ordish. The roof thrusting outwards tends to throw the columns out of the perpendicular; strong iron braces are therefore anchored to the foundation of the inner column, and carried up to the top of the opposite outer column, which are thus made to counteract the thrust of the roof. Another bracing, anchored to the footing of the outer column, is carried up to the top of the inner column, to secure it from being acted on by the force of the wind. This vertical cross-bracing is repeated at every hundred feet, or every fourth bay, and by introducing horizontal diagonal bracing under the roof flats, they are turned as it were into a deep horizontal girder, supported at two ends by the columns vertically braced as just described. This horizontal girder therefore takes the thrust of the three intervening ribs. The way in which the bracing is introduced is very clever, and is an admirable example of the perfect control which the simplest mechanical means, properly applied, give us in dealing with enormous masses. The bracing is all adjusted by connecting screw links on a plan very similar to the method of joining railway carriages; by this means it can be tightened at pleasure, and the position of the columns corrected to the minutest fraction of an inch.

The drawing of the rib in the illustration on page 138 shows the vertical cross-bracing.

The aisles and galleries enclose six courts, three north of the nave, two of which are two hundred and fifty by eighty-seven feet, and the other one hundred and fifty by eighty-seven feet,—three south of the nave, two of which are two hundred and fifty by two hundred feet, and the other one hundred and fifty by two hundred feet. These form the open or glass covered courts, and are the only portions of the building which in this particular resemble the Crystal Palace of 1851. They have only a ground floor, and the roof, which is on the ridge and valley plan, but in spans of fifty feet, is entirely covered with glass. The roof is carried on square iron columns fifty feet apart each way, at the top of which, fifty feet above the ground, wrought-iron trellis girders are fixed on lines running east and west. The columns and trellis girders carry the principals

of the roof, which are all of iron, on the trussed-rafter plan, eight feet apart. The roofs are drained by channels in the valleys conducting the water down the hollow iron columns. The effect of these courts, with their light glass roofs admitting floods of light into the building, gives a pleasing variety to the interior, and affords most valuable exhibiting space.

The great domes, from their huge size, form one of the most prominent features in the building.

It has been before stated that they are situated at the intersection of the nave and transepts. Their form and position have been thus determined. The intersection of the lines of columns in the nave and transept aisles forms two octagons, which, though not mathematically regular, are regular in this one respect—their opposite sides are parallel and equal, the length of the sides being alternately eighty-five feet and thirty-five feet five inches. The points at the angles of these octagons are the chief supports of the domes. For this purpose there is a column at each angle, two feet in diameter, and for architectural effect, as well as for carrying the groined ribs, the object of which will be presently explained, the lower portion of these two-foot columns is clustered with two round columns and one square column of smaller dimensions.

Though the chief points of support, however, are at the eight angles of the octagon, the dome is a dodecagon, the other four points being thus obtained:—The last bay of the nave and transept, instead of having a roof resting on wooden principals going straight across, has two iron diagonal ribs crossing it, forming as it were a groined arch, whose apex is a point in the centre of the bay and in a line with the roof ridge. By joining the apices of these groins and the points in the octagon already determined, we get a nearly regular dodecagon, having its opposite sides parallel and equal, and with eight sides in pairs, each equal to forty-three feet nine inches, and the four remaining sides coming between these pairs, each equal to thirty-five feet five inches. This dodecagon forms the base of the dome, which will thus have eight sides over the nave and transepts, and four sides over the corners of the aisles, equal respectively to the dimensions just given, and a diameter of one hundred and sixty feet.

Each groined rib transmits the weight on it to two columns outside the octagon, so that the dome may be said to rest on sixteen points, its pressure on the angles of the octagon being nearly five times ($4\frac{9}{25}$) as much as it is on the adjacent columns of the nave and transepts.

By the ingenious and novel plan of the groined roof-ribs a dodecagon dome is made to seem to stand on an octagon; no additional columns of support but those actually coming in the sides of the nave and transepts are used, and thus an uninterrupted vista is obtained through both these channels, and a beautiful architectural effect is produced.

Each rib is two feet deep, with a web of three-eighth-inch plate iron, to the edge of which is riveted a top and bottom flange formed of angle iron in such a way as to give the top flange an area of nearly ten inches and three quarters, and the bottom flange an area of nearly nineteen inches and three quarters. The principal rafter and its upright are also made of wrought iron, having a web twelve inches deep, with an equal top and bottom flange of angle iron riveted to it so as to give it a sectional area of about twenty inches and a quarter. Radial pieces of iron

eight inches by five-sixteenths of an inch, connecting the upright and principal rafter with the circular portion of the rib, are introduced every five feet. At the intersections the ribs are strengthened by additional plates of iron, and here, for a short distance, they assume the form of a box girder.

Elevation of Diagonal Ribs, supporting the Rib of Dome over Nave and Transepts.

The intersections of the principal rafters and semi-ellipses are connected by a cast-iron standard, which is continued up above the ridge of the roof to a point one hundred and seven feet from the nave floor line, this being the level of the bed on which the dome ribs rest.

The large columns at the angles of the octagon are two feet in external diameter

with seven-eighths of an inch of metal, and they were raised in three lengths to a height of ninety-five feet, their ends being joined together by flanges and screwed nuts on the inside. To fasten the bolts, a man was lowered down inside the columns, the diameter of which is sufficient to give him room to screw up the nuts. The columns are thus kept perfectly smooth on the outside, and appear like one casting ninety-five feet long. To the top of each two-foot column is bolted a cast-iron stanchion twelve feet high, whose summit is therefore just one hundred and seven feet above the nave floor. On the tops of these stanchions, and resting on ornamental brackets, a gallery three feet wide is carried round the outside and inside of the drum. It is not, however, accessible to the public, but only to men employed in opening the louvres which are here placed for ventilation. To the upper side of the gallery, and through it to the stanchions, the double wrought iron tie-plate acting as the

Section on Line *a b* in elevation, showing junction of Diagonal Ribs at crown of Arch.

Top Plate to receive Column.

Section on Line *c d* in elevation, showing junction of Top of Diagonal Ribs.

Section on Line *e f* in elevation, showing Section of Seat of Diagonal Rib on corner column of Dome.

Section showing Seat of Square and Diagonal Ribs on cap of Column of Nave.

Section of Seat of Diagonal Rib, separated from Square Ribs.

dome's hoop, is securely bolted. It consists of an inner plate of iron six inches by three-eighths of an inch, which is connected with an outer plate ten inches by three-eighths of an inch, so that both these plates take the thrust of the dome. The dome ribs are bedded on the top of them, with their feet bolted through to the heads of the stanchions.

Each dome rib is an iron girder made of boiler plate and angle iron. The top and bottom flanges are nearly equal in section, the former being nineteen square inches and five-eighths, the latter twenty square inches and three-quarters. There is no continuous web between the two flanges, but they are joined at eight-foot intervals by two pieces of boiler plate, having a three-inch wood spacing piece between. The first seven feet of each rib is vertical, and the girder is here three and a half feet deep. At the summit of the vertical portion, which is one hundred and fourteen feet above the nave floor level, is the springing line. The top flange follows the curve traced by a radius of ninety-one feet nine inches and seven-eighths, the centre being a point twelve feet and nearly three inches and a quarter beyond the centre of the dome; the bottom flange is on a curve whose radius is ninety feet one and a quarter inches, and centre fourteen feet and half an inch beyond the dome's centre.

The two flanges thus come nearer each other as they approach the apex, where they are only two feet apart. This point is ninety-one feet above the springing line, and the twelve ribs meet there, abutting against a strong cast-iron pipe, one foot in diameter, to which they are bolted.

Eight wrought-iron purlins between the springing and the apex are bolted to the ribs, and the divisions thus formed are strongly crossed-braced, so as to make the whole as rigid as possible. These purlins are formed of two pieces of T-iron, joined together at six-foot intervals by a half-inch plate. They vary in section, decreasing as they approach the summit, and those in the larger triangles are slightly heavier, on account of their longer bearing. The first purlin of a large triangle is one foot and nearly eight inches and three-quarters deep, and its T-iron flanges are three feet and a half by three inches and a half by half an inch. The upper purlin has a continuous web-plate nearly eleven inches deep, with top and bottom flanges made of four pieces of L-iron, two inches by two inches by a quarter of an inch. These dimensions are altered in a small triangle, the depth of the lower purlin being nearly one foot nine inches, and the T-iron three inches by three inches by half an inch; the upper purlin is here eleven inches deep, but the L-iron is the same as before. Wrought-iron sash-bars to carry the glass are riveted to the purlins every eighteen inches, every fifth bar being made sufficiently heavy to assist in the cross-bracing, and prevent the purlins twisting.

The crown of the dome, for about thirty-two feet down, has an ornamental zinc covering, but the whole of the remainder is glazed. From the apex rises the finial to a height of fifty feet, resting on a concave base, which, being prettily ornamented with cast-iron brackets, windows, and mouldings, is terminated by a globe surrounded by three great circles intersecting each other, from the top of which rises a gilded pinnacle.

Clerestory windows, on a level with those of the nave, are continued round the drum of the dome; and panels above these reach to the gallery level, which has an ornamental railing all round.

These domes are the largest that have ever yet been executed, being one hundred and sixty feet in external diameter, and they have been the most difficult part of the works at Kensington. The dome of St. Peter's is one hundred and fifty-seven feet and a half in diameter, and that of St. Paul's one hundred and twelve feet; but although the Exhibition domes are in themselves larger in every way

than any yet constructed, they do not rise to so great a height above the ground as either of those with which they have been compared. The Exhibition domes spring from a height of one hundred and fourteen feet, and the top of the finial is two hundred and sixty feet above the ground, while the cross on St. Peter's is four hundred and thirty-four feet, and that of St. Paul's three hundred and forty feet, above the pavement. The height of the dome inside, from the top of the raised floor, is two hundred feet.

The scaffolds for the construction of these domes were on a greater scale than anything of the kind ever executed. They were literally forests of timber, looking at a distance like fine lace-work. They occupied nearly the whole interior space of the domes, and were cross-braced and bolted together in every possible way, so as to give them sufficient strength, for they had to bear the weight of the whole of the iron in the domes, one hundred and twenty tons in each.

The scaffold was carried up in eight different stages, between which were horizontal beams. The central portion was a square of twenty-four feet, rising to a height of two hundred feet. As this ascended each stage was cross-braced vertically. From the centre a scaffold radiated into each triangle of the dome, being triangular in shape, though not quite so large. These radiating scaffolds had independent vertical bracing, while at each stage they were cross-braced horizontally, and connected with the central scaffold as well as with each other. The main timbers in the scaffold were from fourteen inches to twelve inches square, while the cross-bracing was on an average twelve inches by six inches. This work was put up by Mr. Clemence, the contractor's clerk of works, and was looked upon as a triumph in scaffolding. It was of immense strength, and so skilfully constructed, that very little of the timber in it was spoiled by cutting, so that when taken down, every particle of wood used, amounting to forty thousand six hundred and seventy-two cubic feet in each scaffold, was as available for any other work as if it had just come from the builder's yard.

These scaffolds were completed in eight weeks, and every beam in them was hoisted by the steam-winch before described, without the aid of which they would have required at least double the time, and have been far more costly to execute.

The annexes, or temporary buildings adjoining the Exhibition, next require description.

The plan of having detached buildings for machinery will be a great improvement on the 1851 Exhibition, where everything was under the same roof; for, admirably arranged and ventilated as that building was, yet the smell of oil and grease inseparable from machinery, occasionally intruded itself on the general visitors.

The western annexe is nine hundred and seventy-five feet long; for a length of seven hundred and twenty feet it is two hundred feet wide, the remaining two hundred and fifty-five feet being one hundred and fifty feet wide. The east side is enclosed by the back wall of the west arcade of the gardens, and the west side, which adjoins the road, has a plain lath and plaster front. It is covered by a ridge and valley roof, supported on most ingeniously constructed light wooden ribs of fifty feet span, placed at fifteen-foot intervals. These ribs are similar in construction to those of the nave, that is, they are formed of planks nailed together, but they are very much lighter. The circular portion springs at a height of ten feet above the ground line. Its elevation is nearly half of a regular polygon, described

GENERAL VIEW OF THE BUILDING IN PROGRESS, BEFORE ADDITIONAL STORY AND REFRESHMENT COLONNADE.

about a semicircle whose diameter is fifty feet; it consists of three planks nine inches wide, the centre plank is one and a quarter inches thick, and has nailed to it on either side a three-quarter inch plank, the ends breaking joint all through. The principal rafters, which are composed of two three-quarter inch planks, rise from a point twenty-eight feet above the ground, and meet above the curved ribs, so as to make the ridge five feet above the crown of the arch. The upright, which has its foot morticed into a sleeper resting on piles, is formed of one and a quarter inch centre-plank, with a three-quarter inch plank on each side, having a strengthening piece four inches by three inches spiked to it on either side to prevent its bending. The principal rafter and upright are connected with the curved rib by radial pieces of one and a quarter inch plank, which are brought rather below the inner line of the curve, and finished off, for the sake of ornament, by a spear-head. The roof-frames are therefore merely planks nailed together, and so disposed that the weight comes on their edge. One half of the roof is covered with boards and felt, and the other half has a glazed skylight, with louvres for ventilation throughout the whole length. The span of each rib is fifty feet, so that in the two hundred feet width there are four spans, and in the hundred and fifty feet, three.

The western annexe, as before mentioned, is devoted to the exhibition of machinery in motion, for which purpose steam-pipes, water-pipes, and shafting are led through it. There is a boarded floor all through, but the heavy machinery is of course bedded on the ground, independent of the floor, which is only used for passages. The entrance to it is through the north end of the west transept, from which point the successive ribs of the roof afford a fine perspective view from end to end.

The superficial extent of the western annexe is one hundred and eighty-four thousand square feet, or about four and a half acres. It is of itself a perfect exhibition of its kind, and contains the most ingenious mechanical contrivances of the age.

The building itself is in many respects worthy of its contents, for its ingenuity, economy, and simplicity. It required no bolting or framing, and any person of ordinary intelligence, able to drive a nail, could have constructed the ribs, which have nothing in them but nails and sawn planks. Each rib was made in a horizontal position, over a full-sized drawing, marked on a platform, and, when complete, it was hoisted vertically by means of a derrick. To prevent it from wobbling, which, from its extreme thinness, it was very liable to do, it was stiffened while being raised by having scaffold-poles tied across the angles, which themselves formed the scaffolding for finishing the roof.

The frames are braced together at the top of the uprights, and the ribs are struttet from the wall-plate to prevent buckling.

The rain-water is let off by pipes attached to every third rib, to drains under the floor.

The eastern annexe is exactly similar to the western in its construction, but by having a large open court three hundred and fifty feet by one hundred feet left in it, its covered area is only ninety-six thousand square feet. Its total length is seven hundred and seventy-five feet, and it is entered from the east transept by means of a covered communication or tunnel under the porch of the Horticultural Gardens.

This annexe is built for large agricultural implements, and any other heavy

machines which do not require to be put in motion to show them off, and many large metallurgic, mineralogical, and geological specimens are also placed here.

The laying out of the works was commenced on the ninth of March, 1861, by three independent agencies—Mr. Marshall acted on the part of the contractors, while Mr. Wakeford, and Serjeant Harkin of the Royal Engineers, acted for the Commissioners.

Great care had to be taken with the measurements, for the slightest error would have thrown the work out considerably, and have occasioned great difficulty in fitting the girders. In the three separate measurements made, the mean variation was only three-eighths of an inch, a difference quite imperceptible in a piece of ground one thousand two hundred feet long by six hundred feet wide. A glance through any of the aisles will show how accurately the work has been conducted; and whether they be examined on the square or diagonally, the columns will be found to range in line as perfectly as they would show in a plan.

About two weeks were occupied in making the measurements, so that the building may be said to have been actually commenced in the beginning of April, 1861, and from that date its progress was uninterrupted and rapid.

It is always interesting, and at the same time it gives a good idea of the size of any building, to state the quantities of the chief materials used in its construction.

There are seven millions of bricks used in the Exhibition building, and these have all been supplied by Messrs. Smeed, of Sittingbourne. Nearly all the cast-iron work was supplied from the Staveley iron-works in Derbyshire, and Mr. Barrow, the owner, superintended its manufacture. There are upwards of four thousand tons of this metal in the building, and to show what care was taken with the castings, we may mention that only four girders proved defective, by breaking in the hydraulic press.

There are upwards of eighty-two thousand and twenty-five feet of columns, equal in length to four miles, and if the one thousand two hundred and sixty-six girders used were placed end to end, they would reach a distance of six miles. The wrought iron was chiefly supplied by the Thames Iron Company, the builders of the "Warrior." This firm undertook the supply of all the iron for the domes, the groined ribs, the fifty-foot roofs, and the iron trellis girders which support them; but at the close of 1861, finding themselves behindhand, they gave up the western dome, and the iron-work for that was supplied and fixed by Messrs. Kelk and Lucas. The total quantity of wrought iron in connection with these parts amounts to one thousand two hundred tons. Mr. Ashton, who fixed the iron-work for Sir Joseph Paxton's two glass buildings, was charged with the same duty here.

The timber-work was executed partly at the works of Messrs. Lucas, at Lowestoft, and partly at Mr. Kelk's works at Pimlico. The former prepared all the window-sashes, &c., &c., by machinery; and the latter constructed the heavy ribs of the nave and transepts. Upwards of one million three hundred thousand superficial feet of floor have been laid down.

To cover the roofs four hundred and eighty-six thousand three hundred and eighty-six square feet of felt is used, equal to eleven acres; and to complete the whole of the glazing, five hundred and fifty-three thousand superficial feet of glass was required, which weighs two hundred and forty-seven tons, and would cover twelve acres and three-quarters.

Inside Elevation of Walls between Ribs.

Section at A B.

Elevation between Span of Ribs,
showing Divisional Bays.

TRANSVERSE SECTION.

Section at D E.

Section at C D.

Section at B C.

The whole of the working drawings were prepared by Mr. Meeson, who had charge of the details of construction from the time that the building was put into the hands of the contractors, and who performed a similar duty in the erection of the Houses of Parliament, under Sir Charles Barry, as well as in several other large undertakings.

About thirty thousand mechanics and fifty thousand labourers have been employed in the building at various times during the last sixty weeks, giving an average number per week of between thirteen and fourteen hundred workmen. This number does not include the men employed in preparing the materials of the building at Staveley, Sittingbourne, Lowestoft, and other places.

The greatest care has been taken to have ample means at hand for the prompt extinction of fire. Water under pressure has been laid on to every part of the building, and there are no less than eighty hydrants evenly distributed throughout. The water is supplied by the West Middlesex Water Company, and has a head varying from one hundred to two hundred feet. A nine-inch main traverses the building from west to east, and from it four-inch branch-pipes are led in all directions to supply the hydrants. This is sufficient to throw any amount of water on to the roof-flats, on the top of which there are portable fire-engines, to pump water on to the nave roof. As in 1851, there is a trained body of men always on the spot to attend to all arrangements for working the hydrants, hoses, and engines; so that if, unfortunately, a fire should occur, a few minutes will suffice to bring a powerful column of water against any point. A new division of police, called the X Division, consisting of about four hundred men, four inspectors, forty sergeants, and one general superintendent, has also been specially appointed by Sir Richard Mayne to do duty in and about the Exhibition. The Contractors insured the building, in February last, for four hundred and fifty thousand pounds, in the Norwich Union Fire Office, at a premium, with the tax, of three thousand and thirty-eight pounds.

The entire direction of the decoration of the building was committed to Mr. Crace. In the nave, the roof is coloured a warm gray, with upright scroll ornaments in maroon red, rising from the sides to the apex of the roof, the ridge of which is strongly defined by a chevrony in black and white. The main arches are coloured a warm brown with panellings of blue and red, relieved with light lines and ornaments, and separated by medallions of black, on which are gold stars. On the crown of each arch are inscribed the names of the principal countries and towns contributing to the exhibition. To avoid the succession of repeated lines of the same colour, variety is produced by alternating the colourings. The edges of the arched ribs, which are in three thicknesses, are defined by springs of black and white in the outer, and red in the centre thickness. The iron columns supporting the roof are painted a pale bronze colour, relieved with light coloured vertical lines, and having the capitals painted red and blue alternately, the raised ornaments being richly gilt. The ornamental gallery railings are also painted bronze, relieved with gilding. The two grand domes are decorated in a very effective manner. The twelve main ribs are painted red and gold, bordered with black and white, and relieved with gilt stars on lozenges of blue. The top centres of the domes are painted blue, with gold rays, and bordered with red and gold. The broad frieze running round the springing is painted blue, with inscriptions in bold gold letters. Round the east dome the inscription is: "O Lord, both riches and honour

PERSPECTIVE VIEW OF NAVE

come of thee, and thou reignest over all ; and in thine hand is power and might ; and in thine hand it is to make great." Round the western dome is the following inscription, taken from the first book of Chronicles : "Tua est Domine magnificentia, et potentia, et gloria, atque Victoria : et tibi laus : euncta enim quæ in cœlo sunt, et in terra tua sunt, tuum Domine regnum." At the west end of the nave is : "Gloria in excelsis Deo et in terra pax ;" and at the east end of the nave is : "The wise and their works are in the hand of God." The cornice above is painted principally in a red and gold colour. The walls above the arches under the freize are richly ornamented in red panelling. In the four smaller compartments are Europe, Asia, Africa, and America, and in the spandrils of the large arches are painted medallions containing figures representing arts, sciences, and manufactures. The walls at the ends of the nave and transepts are also richly ornamented and inscribed with appropriate legends. At the south-west end of the western transept is : "Deus in terram respexit et implevit illam bonis suis ;" and at the north-west end is : "Domini est terra et plenitudo ejus." At the north-east end of the eastern transept is the following line from Cowper :—

"Alternately the nations learn and teach ;"

and at the south-east end is another line from the same poet :—

"Each climate needs what other climes produce."

The picture galleries have their walls painted a sage green as a background for the pictures, and the cove is tinted to correspond, the cornices and soffits being vellum colour, relieved with maroon lines and ornaments. The wall round the arches is also ornamented.

To show with what energy it was necessary to carry out the work, we may mention that the whole of the picture galleries on the east side were painted and decorated in five days. Mr. Crace was asked on a Saturday if his designs were ready—he decided on the colours on Monday morning, the work was commenced at midday, and completed at midday on the following Saturday.

It was indispensable in all the designs for the decorations, that they should be so arranged as to be easy of execution ; that the important principle of "the greatest effect at the least cost" should be strictly attended to. All ornament therefore had to be done by stencilling, and all the colouring on woodwork in distemper. Distemper is a very ready means of colouring surfaces, because one coat of it bears out and gives a result more solid and more luminous than four coats of oil paint, but it has the disadvantage of not being preservative like the last, and it cannot be washed. Perhaps no one will ever discover the very rough state of the principals of the roof of the nave, which are simply saw-cut, besides being blemished by the process of carting and lifting them. The coat of distemper conceals all that. It is composed of whiting and size, made of any tint required by adding the usual colours.

Stencilling is performed by cutting out the pattern required in stout, strong paper, which is then varnished over to strengthen and preserve it ; taking care also to leave proper ties to keep the pattern together. In the progress of the work more than one hundred men were employed at this stencilling, out of whom, we have reason to believe, scarcely half a dozen ever did it before, and yet the task

has been very well executed, and reflects much credit on all those engaged upon it.

It is proposed to raise sufficient funds to execute two large mosaic pictures, twenty-three feet high by thirteen feet wide, as experiments for decorating the panels of the outside walls, following out the plan before alluded to. The mosaics will be made of pottery, in geometric forms, by the pressure of dry powder. Various experiments in laying the mosaics have been made by Messrs. Minton (Stoke-upon-Trent) with mosaics of their own manufacture, and by Messrs. W. B. Simpson and Sons, of West Strand, with mosaics manufactured by Messrs. Maw. The experiments are very promising; and they prove that mosaic pictures may be as easily worked and used in England as in ancient Greece and Rome, or mediæval Italy. They will be as imperishable as the hardest and most perfect terra-cottas. They will create a new branch of industry, which may be worked in any locality, and probably by women as well as men.

The designs will illustrate Industry, Science, and Art. Some cartoons have been already prepared by Mr. Cope, R.A., Mr. J. C. Hook, R.A., Mr. Godfrey Sykes, and Mr. Townroe; two of these will be executed in mosaics as soon as the funds are provided.

The ornamental borders will be designed and the mosaics worked out under the superintendence of Mr. Godfrey Sykes and his assistants.

When two panels have been done, and all the necessary arrangements have been made, after the close of the Exhibition of 1862, for filling the others, designs from other subjects will be sought from the artists named below.

The following are the principal subjects which, at present, it is proposed should be executed, and the artists named are those who have already kindly consented to undertake to make designs for them, when the proper period arrives.

I. SUBJECTS ILLUSTRATING THE PRODUCTION OF RAW MATERIALS.

1. Agriculture, Holman Hunt; 2. Chemistry, W. Cave Thomas; 3. Fishing, J. C. Hook, R.A.; 4. Hunting, Frederick Leighton; 5. Metallurgy, Eyre Crowe; 6. Mining, F. Barwell; 7. Planting, &c., Michael Mulready; 8. Quarrying, G. F. Watts; 9. Sheep Shearing, C. W. Cope, R.A.; 10. Vintage, F. R. Pickersgill, R.A.

II. SUBJECTS ILLUSTRATING MACHINERY.

1. Astronomy, S. Hart, R.A.; 2. Engineering (reserved); 3. Horology (reserved); 4. Mechanics (reserved); 5. Navigation, J. E. Millais, A.R.A.; 6. Railways, R. Townroe.

III. SUBJECTS ILLUSTRATING MANUFACTURES AND HAND LABOUR.

1. Bricklaying, D. Maclise, R.A.; 2. Carpentry, R. Burchett; 3. China Painting, H. A. Bowler; 4. Glass Blowing (reserved); 5. Iron Forging, Godfrey Sykes; 6. Jewelry, D. G. Rossetti; 7. Lace Making, R. Redgrave, R.A.; 8. Metal Casting, A. Elmore, R.A.; 9. Printing, R. Redgrave, R.A.; 10. Straw Plaiting, C. W. Cope, R.A.; 11. Weaving, Octavius Hudson; 12. Pottery, Godfrey Sykes.

IV. SUBJECTS ILLUSTRATING FINE ARTS.

1. Architecture, W. Mulready, R.A.; 2. Painting, W. Mulready, R.A.; 3. Sculpture, W. Mulready, R.A.; 4. Music, J. C. Horsley, A.R.A.

The designs, before they are executed, will be approved by a Committee of the Artists.

The Marquis of Salisbury, K.G., Mr. Layard, M.P., and Mr. Cole, C.B., act as a Committee of Management for carrying out the experiments, and all communications should be addressed to G. F. Duncombe, Esq., Secretary, South Kensington Museum, London, W.

The building can be viewed only as a utilitarian structure for the present. Although it thoroughly provides for the wants of the Exhibition, much remains to be done to render it complete and perfect. Perhaps no building in the world, twenty-four and a half acres in extent, has ever been erected at so low a liability as two hundred thousand pounds, capable of being sold for four hundred and thirty thousand pounds. This charge is only at the rate of twopence per cubic foot, whilst the rate for first-class dwelling-houses is one shilling and fourpence. The Houses of Parliament cost three shillings per cubic foot, and ordinary public buildings generally may be taken at from ninepence to a shilling per cubic foot. Economy has reigned paramount, and we can hardly expect one pound to do as much as six or eight pounds have done in other cases. When the Exhibition has succeeded, and the guarantors are free to deal with a surplus—when the Society of Arts becomes as much the proprietor of the whole, as it is now virtually the proprietor of a large portion of the Cromwell Road front—then we may venture to hope that that Society will be proud of its property, and have the means, as well as the desire, to render it, both inside and outside, a complete building, worthy of being the home of international exhibitions.

POSTSCRIPT.

THE opening of this Temple of Industry will teach many of us, if we need teaching, that the great scheme of creation never stands still. Many youths will have risen into manhood since 1851, many ripe men will have shrunk into old age, and many honoured and once familiar faces will have vanished from the crowd. We shall look in vain for one kingly presence—the keystone of the ceremony—and shall be reminded with much sorrow but with more hope that we are raising a monument to his memory. When the master dies the ship is not left a spectral hulk upon the stocks; she is launched to carry his name into the remotest corners of the earth.

We cannot easily overrate the courage and intellectual originality of a Prince who has taught thousands that there is no wisdom in despising the followers of trade. He did nothing to soil his Royal dignity when he shook hands with Commerce, and pointed out to Art-industry the road it should take. He guided his private conduct by the highest moral principles, and his public acts by that suggestive saying of his own great countryman, Goethe:—

“We should do our utmost to encourage the beautiful, for the useful encourages itself.”

We mourn his loss, but only in a selfish spirit, and envy him his end, dying in the lap of his peaceful victories, in the full glory of a spotless and consistent life.

APPENDIX.

CHARTER OF INCORPORATION OF THE COMMISSIONERS FOR THE EXHIBITION OF 1862.

VICTORIA, by the grace of God of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith, to all to whom these presents shall come greeting: Whereas the Society for the Encouragement of Arts, Manufactures, and Commerce, incorporated by Charter under our Great Seal, bearing date at Westminster the 10th day of June, in the 10th year of our reign, and whereof our most dearly beloved Consort is President (and which Society is hereinafter referred to as the Society of Arts), did previously to the year 1851 establish and cause to be held from time to time, exhibitions of the products of industry and art, which exhibitions resulted in, or conduced to, the holding of the Exhibition of the Works of Industry of all Nations in the year 1851, and which last-named exhibition was attended with great success and public advantage: And whereas the said Society, in order to promote the objects for which it was incorporated, is desirous that facilities should be afforded for holding from time to time international exhibitions of the products of industry and art, and it hath been represented to us by the said Society that many of its members and others of our loving subjects are desirous that such an international exhibition should be holden in the metropolis in the year 1862, or so soon after as conveniently may be, and the said Society is desirous that the entire control and management of such exhibition shall be confided to the Right Honourable Granville George Earl Granville, Lord President of our Council, and Knight of our most noble Order of the Garter; the Right Honourable Richard Plantagenet Campbell Temple Nugent Brydges Chandos Grenville, commonly called Marquis of Chandos; Thomas Baring, Esq., M.P.; Charles Wentworth Dilke the younger, Esq.; and Thomas Fairbairn, Esq.; who are willing to undertake the duty of conducting such exhibition, provided that the holding thereof be approved by us, and that we should be willing to grant to them our Charter of Incorporation, to enable them to conduct and manage the same: And whereas it hath also been represented to us that it is essential to the success of such undertaking that we give our sanction thereto, in order that it may have the confidence not only of all classes of our subjects, but of the subjects of foreign countries, and for such objects, as well as for other the purposes herein appearing, the said Society hath besought us to authorize the said Earl Granville, the Marquis of Chandos, Thomas Baring, Charles Wentworth Dilke, and Thomas Fairbairn to carry into effect such undertaking, and to grant to them our Charter of Incorporation: And whereas it hath been further represented to us that, with a view to the arrangements for the said exhibition, it will be necessary for the corporation to be hereby created forthwith to borrow sums not exceeding in the whole two hundred and fifty thousand pounds, and that the Governor and Company of the Bank of England, or other persons, will be willing to advance that sum, on having the repayment thereof secured by the covenant of the corporation, to be hereby created, and by the covenant of a sufficient number of other persons: And whereas it hath been further represented to us that, with a view of forwarding the undertaking, many of our loving subjects are willing to enter into proper covenants to effect such purpose, the covenants to be so framed as in the event of any payment being made thereunder, as far as practicable to subject the covenantors to bear such payment rateably, according to the amounts by them subscribed, but not exceeding in each case the amount of the subscription: And it hath also been

represented to us that it is essential to the well-conducting of the affairs connected with the undertaking, and with the view of preventing disputes and litigation hereafter in reference thereto, that the general nature of the undertaking, as sanctioned and approved by us, and of the duties, rights, and powers of the persons conducting the same, shall, so far as conveniently may be, be defined, and shall be notified to all whom it may concern, by means of such charter: And whereas it is further represented to us, that under arrangements made between the said Society and the Commissioners for the Exhibition of 1851, incorporated by our Royal Charter bearing date the 15th day of August, in the fourteenth year of our reign, and continued and endowed with further powers by our Royal Charter bearing date the 2nd day of December, in the fifteenth year of our reign, those Commissioners have agreed to grant, rent free, the use of a certain site for the said Exhibition of 1862, subject to certain regulations relating to the approval by them of the buildings to be erected thereon, and with a provision that, in case the persons having the conduct of that exhibition should, before the 31st day of December 1862, give notice of the desire of the said Society to retain certain permanent buildings intended to be erected for the Exhibition of 1862, the Commissioners for the Exhibition of 1851 would grant to the said Society a lease of the site to an extent not exceeding one acre, whereon those permanent buildings should be erected, with a view, amongst other things, to assist the holding of future exhibitions; and in case the same persons shall, out of the profits of the undertaking, pay to the same Commissioners a sum of ten thousand pounds, those Commissioners have agreed to reserve (subject to certain conditions) a certain site for an exhibition to be held in the year 1872. Now know ye that we, being earnestly desirous to promote the holding of an international exhibition of industry and art in the year 1862, do, by these presents, for us, our heirs and successors, give, grant, and ordain that the said Earl Granville, the Marquis of Chandos, Thomas Baring, Charles Wentworth Dilke, and Thomas Fairbairn, and the survivors and survivor of them, and such other persons, if any, as shall be appointed, in manner hereinafter provided, to be Commissioners, in lieu of them or any of them, shall be one body politic and corporate, by the name of "The Commissioners for the Exhibition of 1862," and by that name shall and may sue and be sued, implead and be impleaded, and shall have perpetual succession and a common seal, with full power to alter, vary, break, or renew the same at their discretion: And we will and ordain that the corporation hereby incorporated, hereinafter referred to as "Our Commissioners," is incorporated for the purpose of conducting and managing an international exhibition of the products of industry and art of all nations, such exhibition to be held in or near the metropolis in the year 1862, or within such further time as is hereinafter provided in that behalf; and we will and ordain that our Commissioners shall have the entire conduct, control, and management of the said exhibition, and of the funds that may arise from that undertaking, and that such exhibition may be carried on either in accordance with the precedent afforded by the Exhibition of 1851, or in such other mode or manner as our Commissioners shall in their discretion think fit, but subject to such special directions as are hereinafter contained. And we will and ordain that our Commissioners shall have power to borrow and take up at interest for the purposes of the said undertaking, such sum or sums of money as they may think fit, and may from time to time for such purpose mortgage or pledge the funds or other property of the said corporation, and may under their common seal execute any deed or deeds of covenant or other deed or deeds for securing repayment of any sum or sums so to be borrowed, with interest, and may also procure any persons willing to guarantee the repayment of any such sum or sums or any part thereof, to execute a deed of covenant for payment of such sums as the covenantors may be willing to become liable for, so as to guarantee the due repayment of any sum or sums which may be so borrowed with interest, and all costs, charges, and expenses caused by the non-payment thereof, and that the said deed or deeds of covenant shall contain all necessary and proper provisions, and in particular provisions to insure, as far as practicable, that none of the covenantors shall ultimately bear more than his fair and proper proportion of the sums which they may respectively covenant to pay, and the several persons who shall make and enter into such covenants are hereinafter referred to as the guarantors, and the sum or sums of money which shall be so borrowed and secured to be paid are hereinafter referred to as "The Guaranteed Debt of the Corporation." And we will and ordain that each of the several persons hereby incorporated, and any person who may, as hereinafter provided, be appointed in the place of any of them, may execute the said deed of guarantee in his own individual capacity for such sum as he may think fit. And we do hereby direct and authorize our Commissioners to make and enter into such arrangements as they and the Commissioners for the Exhibition of 1851 may mutually agree upon, for holding the exhibition on a portion of the estate of those Commissioners at Kensington Gore, in accordance with the arrangements already made with them by the Society of Arts, or

which may hereafter be made by our Commissioners with the Commissioners for the Exhibition of 1851, so as [such other or further arrangements shall not, without the approval of the Society, be inconsistent with the arrangements already made between the Society and those Commissioners; or they may choose and contract for the occupation of any other site for holding the intended exhibition, provided such site be situate within ten miles from St. Paul's Cathedral, in the city of London, measured in a direct line. And we will and direct that in case the exhibition shall be held on any part of the lands of the Commissioners for the Exhibition of 1851, then that our Commissioners shall cause a sum not exceeding fifty thousand pounds to be expended on buildings of a permanent character, and such as may be adapted for the purposes for which the Society of Arts may require to have a lease of the site of such buildings, under the arrangements now made or contemplated between them and the Commissioners for the Exhibition of 1851, and which buildings are hereinafter referred to as "The Permanent Buildings." And we will and ordain that our Commissioners may contract for, erect, and, subject to such special directions as are herein contained, may remove, or may leave standing at the close of such exhibition, any building or buildings erected for the same in accordance with such arrangements as have been or shall be lawfully made in that behalf; and may, if they think fit, distribute prizes to exhibitors, and may do all matters and things connected with such distribution; and shall have full power to receive and take such sums of money as they may direct for entrance to the exhibition or for the rent of any part of the buildings to be erected or otherwise relating to the premises, and to dispose of all moneys which shall come to their hands as they shall think fit, for and towards the purposes of the said exhibition or otherwise, in the execution of the powers hereby given to them, including the payment of all expenses, charges, and liabilities which they may incur or become subject to; and that they shall have full power to give effectual discharges to any persons paying any moneys to them, and to settle and adjust any accounts relating thereto; and generally, to do all matters and things that may be necessary, or may appear to them to be expedient, for promoting the ends and designs of the said exhibition. And we do hereby ordain that it shall be lawful for our Commissioners, and they shall have full power and authority, from time to time, to depute or choose any persons, and to give to them all or any of the powers and authorities hereby given to our Commissioners as they shall think fit, for managing and conducting all or any of the matters and things hereby authorized to be done by our Commissioners, and which may be necessary for conducting, or in any manner relate to or concern the said exhibition. And we do hereby ordain that it shall be lawful for our Commissioners from time to time to appoint one or more secretaries and such other officers as they may think fit, and to remove all persons appointed by them, and to appoint others or not, as they see fit. And we do hereby ordain that our Commissioners may elect one member of their corporation to be the chairman thereof, and from time to time may vary such chairman as they think fit; and also that our Commissioners may elect such other person or persons as they may think fit to be Commissioners in lieu of any one or more of them who may die or desire to be discharged from or become incapable to act in the execution of the office of Commissioner before the duties of such office shall be fully performed. And we will and ordain that such appointment of a Commissioner or Commissioners shall be made by a resolution to be passed at a meeting specially to be called for that purpose, but no appointment shall be effectual and valid unless and until the person or persons appointed shall be approved by us, such approval to be testified by a minute in writing, to be signed by one of our principal secretaries of state, and published in the 'London Gazette.' And we order and direct that our Commissioners shall meet when and at such place or places as from time to time they shall direct or determine, and that all and every the powers hereby given to our Commissioners may be exercised at any meeting of any two or more of the Commissioners, and that the decision of the majority attending at any meeting shall be binding, and determine any question proposed; and that when the votes shall be equal the chairman of the corporation for the time being, if present, shall, in addition to his vote as a member, have the casting vote, and that our Commissioners shall and may from time to time make and repeal or alter such rules, orders, regulations, and bylaws for the management of the business of the undertaking as they may think fit, so as the same be not contrary to the laws of this our realm, and such rules, orders, regulations, and bylaws shall when made, and till the same shall be repealed or altered, be as effectual as if they were contained in this our Royal Charter: Provided always, and we will and ordain that in case it shall appear to our Commissioners, from any cause not now foreseen, expedient to postpone the holding of such exhibition until some time in the year 1863, it shall be lawful for them, with the consent in writing of any one of our principal secretaries of state, to do so, by inserting in the 'London Gazette,' on or before the 1st day of March, 1862, notice that the said exhibition is to be so postponed, and in that case they shall and

may hold such exhibition accordingly in the year 1863; and in case after making any contracts or engagements for the holding of such exhibition, they shall from like cause see fit to abandon it altogether, they may, with the like consent, so do, giving like notice thereof, upon and subject to their making compensation to persons with whom they may have entered into any contracts in relation to the holding thereof, or incident thereto, which in such case we require and authorize them to make. And we do will and ordain that so soon as conveniently may be after the closing or abandonment of the exhibition, our Commissioners shall sell, dispose of, and convert into money, all property and effects belonging to them which can be so sold and converted, particularly all the buildings erected by them for the purposes of the undertaking, save and except "The Permanent Buildings." And we will and ordain that immediately after such sale and conversion into money, our Commissioners shall, out of the moneys to arise by such sale and conversion, or of which they shall be otherwise possessed, proceed, after payment of all costs, charges, and expenses incident to the undertaking, to pay and discharge, so far as such moneys will extend, in such order and priority as the law may require or our Commissioners see fit, all their debts and liabilities, save and except the guaranteed debt of the corporation; and after payment of all such debts and liabilities, except as aforesaid, and providing and setting apart a reasonable sum for the payment of future expenses incident to the completion of their duties, our Commissioners shall apply the surplus of such moneys, if any, in or towards the payment and satisfaction of the guaranteed debt of the corporation, or in case the guarantors, or any of them, shall have been called upon to pay, and have paid, any moneys in respect of the guaranteed debt of the corporation, then in repaying to them, so far as the moneys applicable for such purposes will extend, the amount which the guarantors shall have so paid, in such manner, as far as practicable, as to secure that none of the guarantors shall pay more than his just and fair proportion of the sum which he shall have bound himself to contribute. And we will and ordain that as soon as may be after such sale and conversion as aforesaid, our Commissioners shall cause a statement of the accounts relating to the undertaking to be made up, and shall submit for examination the vouchers for the receipt and expenditure to the Governor of the Bank of England, the Deputy-governor of the Bank of England, and the Comptroller-general of the National Debt, or such person or persons as such Governor, Deputy-governor, and Comptroller-general, or any two of them, shall appoint to make such examination, and shall submit a duplicate of such statement to the Society of Arts for their information; and our Commissioners shall then proceed to ascertain whether or not (having reference, if necessary, to the value of the permanent buildings, and calculating such value according to the amount such buildings are likely to realize if taken down and the materials sold) there has been a gain or loss attendant upon the undertaking, and shall forthwith certify, under their common seal, whether there shall have been a gain or loss, and, as near as may be, the estimated amount of such gain or loss, having reference to the value of the permanent buildings, and shall cause their certificate to be forthwith published in the 'London Gazette.' And in case, irrespective of the value of the permanent buildings, there shall have been a loss attending the said undertaking, then if the Society of Arts shall, with a view to obtain a lease of the permanent buildings in accordance with such arrangement as hereinbefore in that behalf mentioned, be willing out of their corporate funds to bear and sustain that loss, it shall be incumbent upon our Commissioners, if so required by the Society of Arts, by notice in writing under the hand of their secretary, to be delivered within one calendar month from the publication of such certificate, to make and enter into such arrangement with the Society as may secure to them the benefits of such lease, subject to the Society bearing such loss and undertaking to provide sufficient funds to enable our Commissioners to pay and satisfy all the remaining debts and liabilities of the said corporation, including the guaranteed debt of the corporation, or so much thereof as shall remain unpaid, and the Society undertaking to indemnify the guarantors from all loss and liability in respect thereof; but in default of the said Society serving such notice in due time, or of their duly and effectually performing all acts to carry out such arrangement as provided for by the clause last hereinbefore contained, then our Commissioners shall forthwith, or so soon as conveniently may be, sell the permanent buildings, and out of the proceeds thereof, after payment of all cost incident to such sale, or otherwise incident to the undertaking and remaining unpaid, shall discharge all debts and liabilities, if any, attending the undertaking, remaining unpaid, except the guaranteed debt of the corporation, and shall apply the surplus, if any, in or towards satisfaction of the guaranteed debt of the corporation, or in case the guarantors, or any of them, shall have been called upon to pay, and have paid, any moneys in respect of the guaranteed debt of the corporation, then in repaying to them, so far as the moneys applicable for such purposes will extend, the amount which the guarantors shall have so paid, in such manner,

as far as practicable, as to secure that none of the guarantors shall pay more than his just and fair proportion of the sum which he shall have bound himself to contribute; and if any surplus shall remain after all such payments, then such surplus shall be disposed of in manner hereinafter directed as to and concerning the ultimate disposable profit of the undertaking in case of there being a gain attending the undertaking. And we will and ordain that in case, after payment of all the debts and liabilities attending the undertaking, it shall be found that irrespective of the permanent buildings, there shall have been a gain attending the undertaking, then the permanent buildings shall be left standing for the Society of Arts, in accordance with the aforesaid arrangements, and out of such gain our Commissioners shall firstly pay to the Commissioners for the Exhibition of 1851, if desired by the Society of Arts, as hereinbefore recited, a sum not exceeding ten thousand pounds as a consideration for their reserving a site containing sixteen acres or thereabouts for an exhibition of the products of industry and art to be held in the year 1872, on the lands belonging to such Commissioners, and shall, secondly, apply in completing the permanent buildings in an architectural manner, and in a manner suitable for the objects for which they are to be employed by the Society of Arts, so much of the unexpended portion of the sum hereinbefore mentioned to be intended to be expended on the permanent buildings not exceeding fifty thousand pounds, as in the judgment of our Commissioners jointly with that of the Commissioners for the Exhibition of 1851 may be requisite for that purpose. And we will and ordain that if there shall remain any surplus of such gain arising from the same undertaking after all the payments hereinbefore provided for, such gain shall be considered as the ultimate disposable profit of the undertaking, and shall be disposed of as hereinafter in that behalf provided, viz., We will and ordain that our Commissioners shall apply the ultimate disposable profit of the undertaking for such purposes connected with the encouragement of arts, manufactures, and commerce as shall be determined by the guarantors at a meeting to be called for the purpose, at such time and place, and in such manner, by advertisement or otherwise, as our Commissioners shall think fit, and whereof twenty-eight days' notice at the least shall be given, at which meeting the question to be determined shall be decided and settled by the votes of guarantors representing the majority in value of the subscriptions of the persons actually present and voting: Provided further, that before proceeding to ascertain the amount of each subscription, for the purpose of such decision, it shall be lawful for the chairman of the meeting to take a show of hands on any question to be submitted to the meeting, and his decision, if not objected to as to such show of hands, shall be considered conclusive and binding without the actual necessity of ascertaining the exact amount for which each guarantor shall have signed the agreement. And we will and ordain that the services of our said Commissioners shall be rendered gratuitously: but we direct that our Commissioners may, out of the corporate funds, allow and pay to their secretaries and officers, and other persons who may aid them in the conduct of such exhibition, such salaries and gratuities or other remuneration as they may think fit; and they may thereout also pay the costs, charges, and expenses incurred, or to be incurred, by the Society of Arts in promoting the said undertaking, and in getting the requisite instruments made and executed by the guarantors: Provided always, that when and as soon as any sum or sums of money which may have been borrowed by our said Commissioners under the powers aforesaid, and all interest thereon shall be fully paid, and all other the matters and things intrusted to be done by this our charter by the said Commissioners hereby incorporated shall be fully performed, or become incapable of being executed, and when the same shall have been certified under the corporate seal to one of our principal secretaries of state, then these presents, and every matter and thing herein contained, shall be absolutely void.

In witness whereof we have caused these our letters to be made patent. Witness ourself at our palace at Westminster, this fourteenth day of February, in the twenty-fourth year of our reign.

DEED OF GUARANTEE GIVEN TO SECURE AN ADVANCE TO BE MADE BY
THE BANK OF ENGLAND TO THE COMMISSIONERS FOR THE EXHIBI-
TION OF 1862.

THIS INDENTURE made the fifteenth day of February in the year of our Lord 1861, between the several persons who have subscribed their names in the first column of the second schedule hereto, and who have affixed their seals hereto, of the first part; and Sir Alexander Spearman, of the National Debt Office, London, Baronet; Matthew Marshall, of the Bank of England, Esquire; and George Earle Gray, of the Bank of England, Esquire; hereinafter called the said Trustees of the second part. Whereas the Commissioners for the Exhibition of 1862, incorporated by Her Majesty's Letters Patent, dated the fourteenth day of February, 1861, have applied to the Governor and Company of the Bank of England, and have requested them to advance the sum of two hundred and fifty thousand pounds, to be repaid with interest on the first of January, 1863, or if the exhibition should be postponed until the year 1863, then on the first day of January, 1864, which the said Governor and Company have consented and agreed to do, on the security of a covenant by the corporation (to be embodied in a separate deed) and of the covenants hereinafter contained. And whereas for the convenience of execution of this indenture by the parties hereto of the first part, the same has been prepared in ten parts. Now this indenture witnesseth that each party hereto, of the first part, for himself, his heirs, executors, and administrators, hereby covenants with the said Trustees, their executors and administrators, that the covenantor, his or her heirs, executors, or administrators, shall at any time, or from time to time when required so to do by the Trustees or Trustee for the time being of these presents, or any two of the Trustees for the time being (if more than two), at any time after the period when the repayment of the said loan shall become due, pay to the said Trustees, or the survivors or survivor of them, or the executors or administrators of the survivor of them, any sum or sums of money, not exceeding in the whole the sum set after his or her seal in the third column of the second schedule hereto: Provided nevertheless, and it is hereby agreed as follows:—

1. That when and so soon as the aggregate of the sums expressing the limits of the liability of the persons who shall become covenantors (by affixing their seals to any part of these presents) shall amount to two hundred and fifty thousand pounds at least, the Commissioners, or any two of them, shall sign and publish in the 'London Gazette' an advertisement in the form contained in the first schedule hereto, and unless and until an advertisement in such form or to the like effect shall be published, none of the parties hereto of the first part, shall be liable under the covenant hereinbefore contained.

2. That whenever any sum of money shall be required to be paid under the preceding covenant, a notice, signed by one at least of the Trustees for the time being, of the sum required to be paid, and of the day (not being less than twenty-eight clear days after the date of the notice) at which the same is to be payable, shall be delivered or sent by post to the usual or last known place of abode of the covenantor, or the executors or administrators of any covenantor, from whom such payment is required, or to the address mentioned in the fifth column of the second schedule for that purpose; and such notice shall also name a bank or banks into which, or one of which, the required payment may be made.

3. That the calls to be made by the Trustees or Trustee for the time being shall, subject to the provisions of the fourth stipulation, be made rateably on each person who shall become a covenantor hereunder by executing any part of these presents, according to the amounts set opposite to his or her seal in the second schedule to the part hereof which he or she shall so execute, the intention of the parties being, that as far as is practicable, and subject to the fourth stipulation, each covenantor and his estate shall ultimately bear his rateable proportion, and no more than his rateable proportion, of the entire sum to be raised.

4. That the Trustees or Trustee for the time being may abstain or desist from enforcing any requisition for payment against any covenantor or the estate of any covenantor, if they or he shall be satisfied that an attempt to enforce it will be useless or unproductive, and may compromise any such requisition against any covenantor or his estate, on such terms as to reduction of amount,

postponement of payment (with or without security), or otherwise as they or he shall think proper, and in determining the amount to be called for, may take into consideration the probability that some of the covenantors may be unable or cannot be compelled to pay their proportion of the sums to be paid.

5. That the moneys recovered under these presents shall be applied first in paying all costs and expenses incurred in the execution of the trusts, next in payment to the Governor and Company of the Bank of England of whatever sum may be due to them from the Commissioners, and any costs and expenses incurred by them by reason of the non-payment thereof, and the balance shall be returned by the Trustees or Trustee for the time being, to the persons who have contributed it, in such manner as they or he may think just, and calculated to give effect, as far as practicable, to the principle of rateable contribution between the covenantors, and that the Trustees or Trustee for the time being, may, after full satisfaction of the Commissioners' debt to the said Governor and Company, enforce the preceding covenant against any covenantor or his estate, for the purpose of setting right any discrepancy between what has been, and what ought according to that principle to have been, contributed by any contributor or contributors, and may apply for that purpose the money raised by so enforcing the covenant.

6. That no persons sued under the preceding covenant shall be entitled to resist the claim on the ground that the requisition for payment is improperly made, or unnecessary, or excessive in amount, or that no such notice as is required by the second stipulation has been given.

7. That if the said Commissioners shall keep a banking account with the Bank of England, and while the said sum of two hundred and fifty thousand pounds, or any part thereof, shall be due and owing by the said Commissioners to the Governor and Company of the Bank of England, any sum shall be standing or paid to the credit of such banking account, the said Governor and Company shall not be bound or required to retain or apply any such sum as last aforesaid in or towards payment of what may be due in respect of the said sum of two hundred and fifty thousand pounds. In witness whereof the said parties hereto have hereunto set their hands and seals, the day and year first above written.

The FIRST SCHEDULE above referred to.

We hereby certify that the aggregate of the sums, expressing the limits of the liability of the persons who have executed the deed of guarantee for enabling the Commissioners for the Exhibition of 1862 to obtain advances from the Bank of England, amounts to the sum of two hundred and fifty thousand pounds.

Signatures of the Commissioners, or any two of them.

The SECOND SCHEDULE above referred to.

1st Column.	2nd Column.	3rd Column.	4th Column.	5th Column.	6th Column.
The Signature of the Guarantor.	The Seal of the Guarantor.	Sum for which the Guarantor renders himself liable.	Christian and Surname (or the usual Name) of the Guarantor to be written in full length by the Wit- ness who attests the Signature at, or im- mediately after, the time at which the Signature of the Guarantor is affixed.	Address of the Gua- rantor, to which ad- dress all Notices may be sent, Notices so sent being hereby declared sufficient for all purposes con- nected with these presents or the in- tended Exhibition.	Name and Address of the Witness attest- ing the Signature and sealing of the Agreement by the Guarantor whose Name is set oppo- site to that of the Witness in the fourth Column of this Schedule.

DECISIONS REGARDING JURIES.

HER MAJESTY'S COMMISSIONERS:

THE EARL GRANVILLE, K.G., CHAIRMAN.

THE DUKE OF BUCKINGHAM
AND CHANDOS.

SIR C. WENTWORTH DILKE, BART.

THOMAS BARING, Esq., M.P.

THOMAS FAIRBAIRN, Esq.

F. R. SANDFORD, *Secretary and General Manager.*

SPECIAL COMMISSIONER FOR JURY DEPARTMENT . . . DR. LYON PLAYFAIR, C.B., F.R.S.

SECRETARY OF JURIES J. F. ISELIN, M.A.

GENERAL CONDITIONS.

1. Objects exhibited in the Industrial Department of the Exhibition have been divided into thirty-six head classes, which, for the convenience of the Juries, have in several cases been subdivided into sections. The classes, with their sections, amount to sixty-five in number.

2. Each class, when not subdivided, and each section of a divided class, will have a separate Jury, but the sectional Juries of a class will be associated as one united Jury in the election of a deputy chairman and in the confirmation of awards. (Vide §§ 7 and 8.)

3. The following is the list of classes and sections for which Juries are appointed:—

Class	1. Mining, quarrying, metallurgy, and mineral products.
„	2. Chemical substances and products, and pharmaceutical processes.
	Section a. Chemical products.
	„ b. Medical and pharmaceutical products and processes.
„	3. Substances used for food.
	Section a. Agricultural produce.
	„ b. Drysaltery, grocery, and preparations of food as sold for consumption.
	„ c. Wines, spirits, beer, and other drinks, and tobacco.
„	4. Animal and vegetable substances used in manufactures.
	Section a. Oils, fats, and wax, and their products.
	„ b. Other animal substances used in manufactures.
	„ c. Vegetable substances used in manufactures, &c.
	„ d. Perfumery.
„	5. Railway plant, including locomotive engines and carriages.
„	6. Carriages not connected with rail or tram roads.
„	7. Manufacturing machines and tools.
	Section a. Machinery employed in spinning and weaving.
	„ b. Machines and tools employed in the manufacture of wood, metal, &c.
„	8. Machinery in general.
„	9. Agricultural and horticultural machines and implements.
„	10. Civil engineering, architectural, and building contrivances.
	Section a. Civil engineering and building contrivances.
	„ b. Sanitary improvements and constructions.
	„ c. Objects shown for architectural beauty.
„	11. Military engineering, armour and accoutrements, ordnance and small arms.
	Section a. Clothing and accoutrements.
	„ b. Tents, camp equipages, and military engineering.
	„ c. Arms and ordnance.
„	12. Naval architecture—ships' tackle.
	Section a. Ships for purposes of war and commerce.
	„ b. Boats, barges, and vessels for amusement, &c.
	„ c. Ships' tackle and rigging.

Class 13. Philosophical instruments, and processes depending upon their use.

- „ 14. Photographie apparatus and photography.
- „ 15. Horological instruments.
- „ 16. Musical instruments.
- „ 17. Surgical instruments and appliances.
- „ 18. Cotton.
- „ 19. Flax and hemp.
- „ 20. Silk and velvet.
- „ 21. Woollen and worsted, including mixed fabrics generally.
- „ 22. Carpets.
- „ 23. Woven, spun, felted, and laid fabrics, when shown as specimens of printing or dyeing.
- „ 24. Tapestry, lace, and embroidery.
- „ 25. Skins, furs, feathers, and hair.

Section *a.* Skins and furs.

„ *b.* Feathers, and manufactures from hair.

- „ 26. Leather, including saddlery and harness.

Section *a.* Leather and manufactures generally made of leather.

„ *b.* Saddlery, harness.

- „ 27. Articles of clothing.

Section *a.* Hats and caps.

„ *b.* Bonnets and general millinery.

„ *c.* Hosiery, gloves, and clothing in general.

„ *d.* Boots and shoes.

- „ 28. Paper, stationery, printing, and bookbinding.

Section *a.* Paper, card, and millboard.

„ *b.* Stationery.

„ *c.* Plate, letterpress, and other modes of printing.

„ *d.* Bookbinding.

- „ 29. Educational works and appliances.

Section *a.* Books and maps.

„ *b.* School fittings, furniture, and apparatus.

„ *c.* Appliances for physical training, including toys and games.

„ *d.* Specimens and illustrations of natural history and physical science.

- „ 30. Furniture and upholstery, including paper-hangings and papier-mâché.

Section *a.* Furniture and upholstery.

„ *b.* Paper-hangings and general decoration.

- „ 31. Iron and general hardware.

Section *a.* Iron manufactures.

„ *b.* Manufactures in brass and copper.

„ *c.* Manufactures in tin, lead, zinc, pewter, and general braziers.

- „ 32. Steel cutlery and edge tools.

Section *a.* Steel manufactures.

„ *b.* Cutlery and edge tools.

- „ 33. Works in precious metals, and their imitations, and jewelry.

- „ 34. Glass.

Section *a.* Stained glass, and glass used in buildings and decorations.

„ *b.* Glass for household use and fancy purposes.

- „ 35. Pottery.

- „ 36. Dressing-cases, despatch-boxes, and travelling-cases.

4. The articles in the building are arranged as much as possible in the sixty-five classes and sections, so as to be coincident with the field of action of each Jury, and to facilitate its labours.

5. If exhibitors accept the office of Jurors, or Associate Jurors or Experts, they cease to be competitors for prizes in the class or section to which they are appointed, and these cannot be awarded either to them individually, or to the firms in which they may be partners.

6. Juries may take evidence when a majority of the Jury deem it advisable, and name the persons to be consulted as Experts: Jurors of another class may also be called in aid by a Jury, when a knowledge involved in that class is required. The Juries, should they desire to secure such aid permanently, may appoint the persons so called in to be "Associate Jurors," but they will not possess a vote. Various nations having returned the names of persons fitted to act as Supplementary Jurors or Deputies to the several classes, lists of these will be published with the view of enabling Juries to obtain their aid, should the Juries so desire.

7. The awards made by the Sectional Juries must be submitted to, and be confirmed by, the Head Jury of the class, which consists of all the Sectional Juries united.

8. Before a Jury can finally make their awards, they must be submitted to a council, consisting of the chairmen of the Juries, in order to secure uniformity of action, and a compliance with the regulations originally laid down by that body.

9. The awards of a Jury, when reported by the Council of Chairmen as being made in conformity to the rules, are final.

10. The Juries will commence their duties on Wednesday, the 7th of May, at ten o'clock, and will be aided in the general transaction of their business by Dr. Lyon Playfair, C.B., who has been appointed Special Commissioner in charge of the Department of Juries. The Special Commissioner, either personally or by deputy, may be present at their deliberations, but he will not have a vote, or interfere in the adjudication of awards.

CONSTITUTION OF JURIES.

11. The Juries consist of the nominees of the Foreign Commissions, with the addition of a certain number of British and Colonial Jurors.

12. Each of the thirty-six Head Juries will be presided over by a chairman to be nominated by Her Majesty's Commissioners, and he will be aided by a deputy-chairman, to be elected at the first meeting of the Jury.

13. The Sectional Juries will elect presidents to take the chair at their meetings; but these Sectional Presidents will not have a seat in the Council of Chairmen.

14. Juries will appoint one of their own body as a reporter or secretary to record the results of their deliberations.

15. Any foreign nation which may not have a representative on a Jury, may nominate one of the actual Jurors as a person through whom they can convey official information in regard to the exhibits and interests of that nation.

16. In the event of any nominee of foreign commissions being obliged to leave the country before the completion of the work of the Juries, a Deputy Juror may be substituted in his place. Such deputies, when announced as likely to be required, may be elected as associates, if desired by the Juries.

COUNCIL OF CHAIRMEN.

17. The chairmen of the thirty-six Head Juries will be associated as a body, to be called the "Council of Chairmen," and will be presided over by the Right Honourable Lord Taunton, appointed by Her Majesty's Commissioners the President of the Council.

18. In the absence of a chairman, the deputy chairman of a Jury will take his seat at the Council.

19. The Council of Chairmen will be constituted of British subjects and of at least an equal number of foreigners.

20. The Council of Chairmen will have to determine the general mode of action of the Juries, and to define the general principles to which it will be advisable to conform in making the awards in the several departments of the Exhibition. It is the wish of Her Majesty's Commissioners that medals should be awarded to articles possessing decided superiority, of whatever nature that superiority may be, and not with reference to a merely individual competition.

21. The Council of Chairmen must see that the awards of the several Juries are in accordance with the rules laid down, before they are considered final.

22. It will be desirable that the Council of Chairmen should hold a meeting before the assembling of the Juries; and this meeting will be held on Saturday the 3rd of May, at twelve o'clock at noon.

23. In order to represent the wishes of Her Majesty's Commissioners, and to explain its rules, the Special Commissioner will attend the meetings of the Council, and aid it in the transaction of business; but he will not possess a vote, or act as a member of the Council.

MEETING OF JURIES.

24. The Jurors, on being appointed, will receive immediate notice of appointment, and their names will be published.

25. The Juries will meet for the transaction of business on Wednesday the 7th of May. The place, day, and hour of each meeting of the Juries will be fixed by the chairman, or in his absence

by the vice-chairman. The meetings of the Sectional Juries will in like manner be determined by the president of these Sectional Juries, to be elected at their first meeting. Notice of the days and hours of meeting will be given at the office of the Secretary of Juries, from whence summonses will be issued. The days of meetings will also be posted in the place where the Jury usually meet, and near the secretary's office.

26. In the event of an equality of votes at any meeting of a Jury or Sectional Jury, the chairman for the time being shall have a casting vote.

27. Although it will be impossible to set apart special days in which the Juries alone can examine the articles exhibited, to the exclusion of the public, arrangements will be made to carry on these examinations with as little inconvenience as possible.

28. *Jurors, immediately on their arrival in London, will report themselves to J. F. Iselin, Esq., M.A., the Secretary of Juries, at the Jury Office, on the north side of the main entrance to the Exhibition Building from Prince Albert's Road, where they will obtain their Juror's Ticket, which entitles them to admission, and receive all necessary information.*

29. *All correspondence relating to the work of the Juries is to be addressed to J. F. Iselin, Esq., M.A., Secretary of Juries, Jury Office, Exhibition Building, South Kensington, W.*

POSITION OF CLASSES IN THE BUILDING.

No. of Class.	Nature of Articles Exhibited.	Position in Building.
1.	Mining, quarrying, &c.	South Court, Eastern Annexe.
2.	Chemical substances	Eastern Annexe, South-east Passage.
3.	Substances used as food	Eastern Annexe, East Side.
4.	Animal and vegetable substances	
5.	Railway plant	Western Annexe.
6.	Carriages	South-east Court.
7.	Manufacturing machines and tools	Western Annexe.
8.	Machinery in general	Western Annexe.
9.	Agricultural implements	West side of Eastern Annexe.
10.	Civil engineering	South Court.
11.	Military engineering	South Court.
12.	Naval architecture	South Court.
13.	Philosophical instruments	Gallery, North Court.
14.	Photography	Central Tower, and Gallery, North Court.
15.	Horological instruments	Gallery, North Court.
16.	Musical instruments	North Court.
17.	Surgical instruments	Gallery, North Court.
18.	Cotton	Gallery, South.
19.	Flax and hemp	Gallery, South-east Transept.
20.	Silk and velvet	South-east Gallery.
21.	Woollen and worsted	South-east Gallery.
22.	Carpets	Under North-east Gallery and on Gallery walls.
23.	Woven, spun, felted, and laid fabrics	South-east Gallery.
24.	Tapestry, lace, and embroidery	South-east Gallery.
25.	Skins, fur, feathers, and hair	Transept South Court.
26.	Leather	Transept South Court.
27.	Articles of clothing, &c.	South-east Angle.
28.	Paper, stationery, &c.	Gallery, North Court.
29.	Educational works	Central Tower.
30.	Furniture and upholstery	North Court.
31.	Hardware	South Court.
32.	Steel, cutlery, and edge tools	Transept, South Court.
33.	Precious metals	South Court, Central Division.
34.	Glass	South Court, Central Division.
35.	Pottery	North Court, Central Division.
36.	Manufactures not included in previous Classes	Gallery, North Court.

POSITION OF FOREIGN COUNTRIES IN THE BUILDING.

Name.	Ground.	Gallery.
France	S.W. Court.	S.W. Gallery.
Zollverein	S.W. Transept.	S.W. Transept. Gallery.
Austria	N.W. Transept.	N.W. " "
Belgium	N.W. Court, No. 1.	N.W. Gallery, No. 1.
Holland	" " 2.	" " 2.
Switzerland	" " 3.	" " 3.
Denmark	" " 4.	" " 4.
Norway and Sweden . .	" " 5.	" " 5.
Russia	" " 6.	" " 5.
Costa Rica	N.E. Court, No. 1.	
Peru	" " 2.	
Uruguay	" " 3.	
Venezuela	" " 4.	
Ecuador	" " 5.	
Argentine Republic . .	" " 6.	
Brazil	" " 7.	
Turkey	" " 8.	
Spain	S.W. Court, No. 2.	Spain, S.W., No. 2.
Portugal	S.C. Court, No. 1.	Portugal, S.C., No. 1.
Italy	" " 2.	Italy, S.C., No. 2.
Rome	" " "	
America	S.E. Court.	
Hanse Towns	S.W. Transept, No. 2.	
Canada	N. E. Transept, East Side.	
New Brunswick		
Prince Edward's Island .		
British Columbia . . .		
Vancouver's Island . .		
Nova Scotia		
Tasmania		
Victoria		
Bermuda		
Newfoundland		
Ceylon		
Malta		
Jamaica		
Dominica		
St. Vincent		
Trinidad		
Barbados		
British Guiana		
New South Wales	Nave, North Side.	
Queensland		
Victoria		
South Australia		
Hayti		
Bahamas		
Natal		
Western Australia . . .		
New Zealand		
Ionian Islands		
Japan, China		
St. Helena, West Africa		
Siam, Liberia		

References :—S.W., South-west ; N.W., North-west ; N.C., North Centre ; S.C., South Centre.

INTERNATIONAL EXHIBITION OF 1862.

LIST OF GUARANTORS.

Those marked with an Asterisk () are Members of the Society of Arts.*

*HIS ROYAL HIGHNESS THE PRINCE CONSORT, K.G. £10,000

*Abel, Frederick Augustus, F.R.S., Royal Crescent, Woolwich, S.E.	£100	*Armstrong, Sir Wm. George, C.B., Newcastle-on- Tyne	£500
*Acland, Sir Thomas Dyke, Bart., F.R.S., Killerton, Exeter	200	*Artinstall, George, Warrington	500
*Acland, Henry W., M.D., F.R.S., Oxford	100	*Ashburton, Lord, Bath House, Piccadilly, w. ...	3000
*Adam, James Skipper, 8 Philpot Lane, E.C.	200	Ashford, Wm. (W. and G. Ashford and Winder), Birmingham	100
*Adams, George G., 126 Sloane Street, s.w.	100	Ashton, Thomas, Manchester	500
Adams, Wm. Salkeld (W. S. Adams and Sons), 57 Haymarket, s.w.	100	*Asprey, Charles, 166 New Bond Street, w. ...	1000
Agnew, Thomas, Manchester	100	*Atkinson, Wm., 47 Gordon Square, w.c.	100
Agnew, Thomas, jun., Manchester	100	*Austin, George, 7 London Street, E.C.	100
Agnew, William, Manchester	100	*Bagnall, Charles, Tootherley Hall, Lichfield ...	500
Ainsworth, Thomas, Cleator, Whitehaven	500	Bagley, Thos. (Henderson and Co.), Durham ...	300
*Akroyd, Edward (Jas. Akroyd and Son), Halifax ...	500	*Bake, Henry, 8 Philpot Lane, E.C.	200
*Aldam, William, Frickley Hall, near Doncaster ...	100	Baker, Anthony Kington, Cheltenham	100
*Alexander, H. B., The Laurels, Barnes, s.w.	100	*Baker, William, 30 Cranbourne Street, w.c. ...	100
Alexander, James, 10 Porchester Terrace, Bays- water, w.	500	Balderson, Henry, Corner Hall, Hemel Hempstead	100
*Aley, Frederick William, 8 Thurloe Place, s.w. ...	100	Balfour, George Edmund, Manchester	250
*Alger, John, 16 Oakley Square, N.W.	100	*Ball, John, 3 Moorgate Street, E.C.	500
Allen, C. Bruce, Architectural Museum, South Kensington, s.w.	100	Balleras, Guillermo Esteban, Seville Villa, Carl- ton Hill, St. John's Wood, N.W.	500
*Allen, Edward Ellis, 2 Brunswick Place, Brompt- on, s.w.	100	Baring, Thos., M.P., 41 Upper Grosvenor St., w.	3000
Allin, Thomas C., 23 Onslow Square, s.w.	100	Barker, T. Herbert, M.D., F.R.S., Bedford	100
*Allhusen, Christian, Gray Street, Newcastle-on- Tyne	1000	Barlow, Fredk. Pratt (John Dickinson and Co.), 61 Old Bailey, E.C.	1000
Allsopp, Henry (Samuel Allsopp and Sons, Burton- on-Trent), Hinslip Hall, Worcester	1000	Barlow, Edward, Manchester	100
Amies, Nathaniel Jones, Manchester	100	Barnard, John Ansley Louis, 8 Alfred Villas, Al- bert Road East, Dalston, N.E.	100
*Anderson, Arthur, 122 Leadenhall Street, E.C. ...	500	Barnett, Sampson, 23 Forston Street, N.	100
*Anderson, Sir James, Glasgow	100	Barrer, Victor, 1 Ironmonger Lane, E.C.	100
Anderson, Thomas, M.D., Glasgow	100	*Barrett, Henry (R. Barrett and Sons), Beech Street, Barbican, E.C.	200
*Anderton, James, 20 New Bridge Street, E.C. ...	200	Barruelson, Arnold, The Downs, Waterloo, Liver- pool	200
*Andrew, W. P., 26 Montagu Square, w.	500	*Bartholemew, Charles, Broxholme, Doneaster ...	100
*Angell, Joseph, 10 Strand, w.c.	500	*Bartlett, Wm. Edward, 8 King William St., E.C. ...	100
*Ansted, David Thomas, Bon Air, Guernsey	100	Bass, Michael Thomas, M.P., Burton-on-Trent ...	1000
*Antrobus, Sir Edmund, Bart., 146 Piccadilly, w. ...	2000	*Bateman, J. F., F.R.S., 16 Great George Street, Westminster, s.w.	200
Anworth, W. S. (Middleton and Anworth), Nor- wich	100	*Bateman, Joseph, LL.D., 24 Bedford Place, Ken- sington, w.	100
*Appold, John George, F.R.S., 23 Wilson Street, Finsbury, E.C.	1000	*Bates, Joshua, 21 Arlington St., St. James's, s.w.	3000
Archer, Professor J. C., Edinburgh	100	*Batty, George, Pavement, Finsbury, E.C.	100
Armitage, Benjamin (Elkanah Armitage and Sons), Manchester	1000	*Bax, Edward, 1 Charing Cross, s.w.	100
Armitage, William (Armitage and Rigbys), Man- chester	500	*Bazley, Thomas, M.P., Manchester	1000
		Beale, Sam., M.P., 19 Park St., Westminster, s.w.	1000
		Beaumont, John, Dalton, Huddersfield	500

Beaumont, Joseph, jun., Huddersfield ...	£250	*Bragg, John (T. and J. Bragg), Birmingham ...	£150
*Beekwith, Edward Lonsdale (Boord, Son, and Beekwith), Bartholomew Close, E.C. ...	500	*Branston, Robt. E., Denmark Hill, Camberwell, s. ...	200
*Begbie, Thos. S., 4 Mansion House Place, E.C. ...	500	*Brassey, Thomas, 4 Great George Street, Westminster, s.w. ...	2000
Behrens, Solomon Levy, Manchester ...	300	Breach, J. G., Burlington Hotel, Cork Street, w. ...	250
*Beleher, Sir Edward, Union Club, s.w. ...	100	*Breflit, Edgar, 61 King William Street, E.C. ...	1000
*Bell, John, 15 Douro Place, Victoria Road, Kensington, w. ...	100	*Brett, John W., 2 Hanover Square, w. ...	500
Bellville, W. G., 64 Red Lion Street, Holborn, w.c. ...	100	Brewster, Sir David, K.H., University, Edinburgh ...	100
*Bendon, George, 50 High Holborn, w.c. ...	100	*Bridson, Henry, Harwood, near Bolton ...	250
*Benedict, Jules, 2 Manchester Square, w. ...	300	Brigg, John Fligg (J. F. Brigg and Co.), Huddersfield ...	150
Benham, Frederick, 19 Wigmore Street, w. ...	500	Briggs, George, 45 Wigmore Street, w. ...	100
Bennett, Henry, 166 Gresham House, City, E.C. ...	200	Brock, William, Exeter ...	250
*Bennett, John, 65 Cheapside, E.C. ...	500	*Brocklehurst, Thos. Unett, The Fenece, Macclesfield ...	100
*Bennett, John, 50 Westbourne Park Villas, w. ...	500	Brodie, John Lamont, Manchester ...	100
Bennett, Wm. Cox, 62 Cornhill, E.C. ...	100	*Brook, Charles, Huddersfield ...	200
*Bentall, Edward Hammond, Heybridge, Maldon, Essex ...	100	*Brook, Charles, jun. (Jonas Brook and Bros.), Meltham Mills, Huddersfield ...	1000
Bentley, Joseph, 13 Paternoster Row, E.C. ...	100	*Brooke, Charles, F.R.S., 16 Fitzroy Square, w. ...	100
*Benyon, Richard, M.P., 34 Grosvenor Square, w. ...	1000	Brooke, Edward, Norton Lodge, Timperley, Cheshire ...	250
Besley, Frederiek, Nicholson's Wharf, E.C. ...	200	Brooke, George (Starkey Bros.), Huddersfield ...	1000
Besley, Robert, Fann Street, E.C. ...	200	*Brooke, Thomas (John Brooke and Sons), Huddersfield ...	1000
Bessborough, Earl of, 40 Charles Street, Berkeley Square, w. ...	500	*Brooks, Vincent, 1 Chandos Street, w.c. ...	200
*Best, William, Gresham Club, E.C. ...	100	*Brooman, Richard Archibald, 166 Fleet St., E.C. ...	250
*Beveridge, Erskine, Dunfermline ...	500	*Brough, Geo. (Stratton and Brough), 3 Coventry Street, w.c. ...	200
Bevington, James B., Neckinger Mills, Bermondsey, S.E. ...	100	Brown, Mrs. H., at Miss Burdett Coutts's, Stratton Street, w. ...	500
Bevington, Samuel B. (Bevington and Sons), Bermondsey, S.E. ...	100	Brown, John (John Brown and Co.), Shirl Hall, Sheffield ...	250
*Beyer, Charles Frederiek (Beyer, Peacock, and Co.), Manchester ...	1000	*Brown, Michael Lewis, 47 St. Martin's Lane, w.c. ...	100
Bieknell, Henry Sandford, 3 High Street, Newington Butts, s. ...	500	Browning, Jno. (Spence and Browning), Minories, E.C. ...	250
*Biddle, Daniel, 81 Oxford Street, w. ...	500	*Brunlees, James, 5 Victoria St., Westminster, s.w. ...	1000
Billinge, James, Ashton, near Wigan ...	100	Brunswick, George, 72 Newman St., w. ...	100
Bingley, Alfred William, Bath Hotel, Arlington Street, Piccadilly, s.w. ...	100	*Brunswick, Myrthil, 26 Newman Street, Oxford Street ...	100
*Bird, George, 58 Edgeware Road, N.W. ...	500	*Bueclench, Duke of, 37 Belgrave Square, s.w. ...	5000
Bird, Stephen, Horton Villa, Kensington, w. ...	250	Buck, Joseph, 124 Newgate Street, E.C. ...	100
*Bird, William, 2 Laurenee Pountney Hill, E.C. ...	100	*Buckingham and Chandos, Duke of, Wootton, Aylesbury ...	1000
*Birkbeck, George Henry (Birkbeck and *Tongue), 34 Southampton Buildings, w.c. ...	300	Buekley, John Arthur, Girdlers Hall, Basin hall Street, E.C. ...	200
*Birley, Richard, Sudley, Pendleton, Manchester ...	500	Buckley, Robt. Orford, 19 Cleveland Square, w. ...	1000
*Black, Henry, 1A Berners Street, Oxford Street, w. ...	100	Buekley, Nathaniel, Ashton-under-Lyne ...	100
Blackloek, William Thomas, Manchester ...	500	Buekton, Joshua, Leeds ...	100
Blackwell, Samuel, 259 Oxford Street, w.c. ...	200	Bunning, James Bunstone, Guildhall, E.C. ...	500
*Blackwell, Thomas (Crosse and Blackwell), Soho Square, w. ...	300	Burgess, James Reeve, 47 Brewer Street, Golden Square, w. ...	100
*Blair, Harrison, Manchester ...	200	Barrell, Charles, Thetford, Norfolk ...	500
*Blake, H. Wollaston, F.R.S., 8 Devonshire Pl., w. ...	100	*Burt, Henry Potter, Littlecot, Streatham Common, s. ...	500
Blandy, Jno. Jackson, Highgrove, Reading, Berks ...	100	*Burzorjee, Dr., Northwick Lodge, St. John's Wood, N.W. ...	100
*Blashfield, John Marriott, Stamford Pottery, Stamford ...	100	*Butter, Henry, 4 Minerva Pl., Barnsbury Pk., s. ...	100
Blews, W. H. M. (Wm. Blews and Son), Birmingham ...	100	Cadbury, James, South Place, Gainsbury, Banbury ...	250
*Bodkin, William Henry, West Hill, Highgate, N. ...	500	Caley, Nathaniel Henry, London Lane, Norwich ...	100
*Boileau, Sir John P., Bart., F.R.S., 28 Upper Brook Street, w. ...	500	Caley, F. G. (Caley Brothers), Windsor ...	100
Bowker, Charles Hardy, Manchester ...	100	Callaghan, Wm., 23A New Bond Street, w. ...	200
*Bowley, Robert Kanzor, 53 Charing Cross, w.c. ...	500	*Callow, James Wm. (Callow and Son), 8 Park Lane, w. ...	100
*Bowring, Edgar Alfred, Board of Trade, s.w. ...	200	Calvert, Henry, Manchester ...	100
*Braby, Fredk., Fitzroy Works, Euston Road, N.W. ...	100		
*Bradley, J. W., 47 Pall Mall, s.w. ...	100		

*Cama, Muncherzee Hormusjee, 21 Gresham House, E.C. £200	*Cobden, George Long, 13 Leonard Place, Kensington, W. £300
*Campbell, C. Minton, Potteries, Stoke-upon-Trent 2000	Cobbett, Arthur, 18 Pall Mall, S.W. ... 100
*Campbell, James, 158 Regent Street, W. ... 100	*Cobbett, Richard, 25 Northumberland Street, Strand, W.C. 100
*Candy, Charles, Watling Street, E.C. ... 500	*Cock, John, jun., South Molton, North Devon ... 100
Cane, Thomas, Hereford 200	Cokerill, Wm. James, Chelsea Villas, Brompton, S.W. 100
Cannan, Herbert Harris, 36 Basinghall Street, E.C. 100	*Cohen, H. L., 2 Cleveland Terrace, Hyde Park, W. 100
*Carstairs, Peter, The Green, Richmond, S.W. ... 200	*Cole, Henry, C.B., 17 Onslow Square, S.W. ... 300
Carver, John (Carver Bros.), Manchester ... 100	*Cole, Thomas, 6 Castle Street, Holborn, E.C. ... 100
*Cassell, John (Cassell, Petter, and Galpin), La Belle Sauvage Yard), E.C. 250	Coleman, Richard, Chelmsford 100
Cave, Stephen, M.P., 35 Wilton Place, S.W. ... 500	Colquhoun, John C., 8 Chesham Street, S.W. ... 100
*Chadwick, David, 56 Pall Mall, Manchester ... 100	Coles, Richard, Mayor of Southampton ... 100
*Chadwick, Edwin, C.B., 5 Montague Villas, Richmond, S.W. 100	*Collard, Charles Lukey (Collard and Collard), 16 Grosvenor Street, W. 1000
*Chadwick, John, 12 Mosley Street, Manchester ... 200	Collins, Thomas Samuel, M.P., Knaresborough ... 200
*Challoner, Col. Thomas Challoner Bisse, Portnal Park, Surrey 500	*Collyer, Robert, M.D., 8 Alpha Road, St. John's Wood, N.W. 500
Chambers, Geo. Wilton (Geo. Wright and Co.), Burton Weir, Sheffield 500	*Colman, Edward (J. and J. Colman), 26 Cannon Street, E.C. 1000
*Chambers, Thos. King, M.D., 22B Brook Street, Grosvenor Square, W. 300	*Colnaghi, D. (Colnaghi, Scott, and Co.), 13 Pall Mall East, S.W. 1000
Chambers, Thomas, Common Serjeant, 3 Pump Court, Temple, E.C. 100	Conolly, Thomas, M.P., 19 Hanover Square, W. ... 1000
Chance, J. Timmins (Chance, Bros.), Birmingham 1000	*Conybeare, H., 20 Duke Street, Westminster, S.W. 1500
*Chantrill, George Frederick, Liverpool ... 100	*Cook, Thomas W., 8 Clifford Street, New Bond Street, W. 250
*Chapman, Edward (Chapman and Hall), 193 Piccadilly, W. 300	Cooke, Christopher, 58 Pall Mall, S.W. ... 250
*Chappell, Thomas (Chappell and Co.), 50 New Bond Street, W. 500	*Cooke, Hindley, and Law, 11 Friday Street, E.C. 1000
Chapple, Frederick, Hayton Hall, near Preseot ... 500	*Cooke, William, 26 Spring Gardens, S.W. ... 1000
*Charley, William, Seymour Hill, Belfast ... 100	Coope, Octavius Edward, Rochetts, Brentwood, Essex 1000
*Charlton, Henry, Edgbaston, Birmingham ... 100	Copestake, Sampson (Copestake, Moore, Crampton, and Co.), 5 Bow Churchyard, E.C. ... 1000
*Chater, Joseph, St. Dunstan's Hill, E.C. ... 100	*Corbett, John, Stoke Works, Bromsgrove ... 100
Chatfield, Chas., Broad Green House, Croydon, S. 100	*Corderoy, Edward, Clapham Park, S. ... 100
*Chawner, Richard Croft, The Abnalls, Lichfield 100	*Cornforth, John, Birmingham ... 100
*Chester, Harry, 63 Rutland Gate, S.W. ... 300	Cottam, Edward (Robinson and Cottam), 7 Parliament Street, S. W. 300
*Christie, William, 1 Sussex Terrace, King's Road, Chelsea, S.W. 100	Cottam, Louis (Cottam and Co.), 2 Winsley Street, W. 300
*Christy, Henry, 35 Graeeshurch Street, E.C. ... 1000	*Coulthurst, Wm. M., 59 Strand, W.C. ... 1000
Christy, Richard (W. M. Christy and Sons), Manchester 500	*Cousens, Frederick Wm., 16 Water Lane, E.C. ... 300
*Churchward, J. G., Admiralty House, Dover ... 500	*Coutts, Miss Angela Georgina Burdett, Stratton Street, W. 3000
*Clabburn, William H., Thorpe, near Norwich ... 100	*Cowie, Thomas S., 24 George Street, Hanover Square, W. 500
*Clare, Charles Leigh, Manchester ... 250	Cowlishaw, Wm. George (James Houldsworth and Co.), Manchester 200
Clark, Charles, Mayor of Wolverhampton ... 100	Cowper, Henry, Banbury 100
*Clark, Henry, M.D., F.S.A., Southampton ... 100	*Cowper, the Right Hon. Wm., M.P., 17 Curzon Street, W. 100
*Clarke, Cyrus, Street, Somerset ... 100	*Craze, John Gregory, 14 Wigmore Street, W. ... 200
Clarke, Sir James, Bart., Bagshot Park, Surrey ... 200	*Crampton, T. R., 15 Buckingham Street, Strand, W.C. 1000
Clarke, Joseph, North Hill Cottage, Highgate, N. 100	*Creed, Henry, 33 Conduit Street, W. ... 100
*Clarke, J. P., King Street Mill, Leicester ... 100	*Cremer, Wm. Henry, jun., 210 Regent Street, W. 200
*Clarke, Robert, London Coffee House, Ludgate Hill, E.C. 100	*Cremer, W. H., 27 New Bond Street, W. ... 200
Clarke, Somers, 57 Regency Square, Brighton ... 100	Crisp, Thos. Dawson (Clabburn, Son, and Crisp), Norwich 100
Clanricarde, Marquis of, 2 Carlton Terrace, S.W. 500	*Croll, Alexander Angus, 10 Coleman Street, E.C. 1000
*Claudet, A., F.R.S., 107 Regent Street, W. ... 100	Crossfield, Henry, Liverpool 500
*Clay, Richard, Bread Street Hill, E.C. ... 300	*Cubitt, Lewis, 52 Bedford Square, W.C. ... 500
*Clegg, Thomas, Corporation Street, Manchester ... 500	*Cubitt, Wm. (Lord Mayor), Mansion House, E.C. ; Ponton Lodge, Andover 1000
*Clennell, John E., London Fields, Hackney, N.E. 100	
*Clifford, Charles, Temple, E.C. ... 200	
Clouston, Peter, Lord Provost of Glasgow ... 100	
*Clowes, George (Clowes and Sons), Duke Street, Stamford Street, S. 500	
*Clutton, John, 3 Sussex Square, Hyde Park, N.W. 500	

*Cundall, Joseph, 168 New Bond Street, w. ...	£100	Dunlop, Walter, Bradford, Yorkshire ...	£200
*Cunningham, H. D. P., R.N., Bury, Gosport ...	100	*Dunn, Thomas, Richmond Hill, Sheffield ...	250
Cuthell, Andrew, 63 Warwick Square, s.w. ...	1000	*Dunn, Thomas, Windsor Bridge Iron Works, Man-	
Curt, Joseph, 33 Great Portland Street, w. ...	100	chester	150
		Dyte, Hen., 6 King's Bench Walk, Temple, E.C. ...	100
*Daniell, Richard Percival (Daniell and Co.), 129			
New Bond Street, w.	1000	Eardly, Sir Culling Eardley, Bart., Bidnell Park,	
*Darbishire, Sam. Duckinfield, Pendyffryn, Conway	1000	Hadfield	1000
Davies, John, Grove Hill, Woodford, Essex ...	100	Eastlake, Sir Charles L., President of the Royal	
*Davis, Frederick, 100 New Bond Street, w. ...	500	Academy, 7 Fitzroy Square, w.	200
*Davison, Frederic (Gray and Davison), 370 Euston		Easton, James (Easton, Amos, and Sons), 25	
Road, N.W.	200	Russell Square, W.C.	500
Davison, Robert, 8 London Street, E.C. ...	100	*Easton, James, jun. (Easton, Amos, and Sons), 42	
*Davy, Charles, 100 Upper Thames Street, E.C. ...	100	Tavistock Square, W.C.	1000
Day, C. A. (C. A. Day and Co.), Southampton ...	1000	*Eavestaff, Wm. G., 60 Great Russell Street, W.C.	100
*Day, Wm. (Day and Son), 6 Gate Street, Lincoln's		*Elbury, Lord, 107 Park Place, Grosvenor Square, w.	500
Inn, W.C.	1000	Ecroyd, Wm. F. (W. Ecroyd and Sons), Burnley	500
*Deacon, Henry, Appleton, near Warrington ...	100	*Edgar, W. S. (Swan and Edgar), 10 Piccadilly, w.	1000
*Debenham W. J. (Deacon, Son, and Freebody),		*Edgington, Benjamin, 2 Duke Street, Southwark, s.	500
44 Wigmore Street, w.	500	Edmeston, James, 5 Crown Court, Old Broad	
*De la Rue, Warren (Thos. De la Rue and Co.),		Street, E.C.	100
110 Bunhill Row, E.C.	1000	*Edwards, J. Passmore, 166 Fleet Street, E.C. ...	100
Dent, William, Bickley Park, Bromley, s.E. ...	200	*Edwards, Morton, 5 George Street, Hanover	
*Denton, John Bailey, Stevenage	100	Square, w.	100
*Derham, James, Wrington Villa, Cotham Road,		Edwards, Richard J. (Edwards and Son), Burslem	500
Bristol	100	*Edwardes, Thomas Dyer, 5 Hyde Park Gate, Ken-	
*Derham, Samuel, Nelson Street, Bristol ...	100	sington Gore, w.	250
*Devonshire, Duke of, Devonshire House, Picca-		*Elkington, Frederick (Elkington and Co.), Birm-	
dilly, w.	2000	ingham	2000
Dewhurst, George Charnley, Manchester ...	200	Elliott, Chas. (Elliott Brothers), 30 Strand, W.C.	200
*Dickins, Thomas, Edgemoor House, Higher		*Elliott, George Augustus, 13A Belgrave Square,	
Broughton, Manchester	200	s.w.	100
Dickinson, James (Wm. Dickinson and Sons),		*Ellis, James, M.D., Sudbrook Park, Petersham,	
Blackburn	500	s.w.	200
*Dickson, Peter, 28 Upper Brook Street, w. ...	1000	Elwell, Edward, Forge, Wellesbury	200
*Dilke, C. Wentworth, 76 Sloane Street, s.w. ...	1000	*Emanuel, Harry, 70 and 71 Brook Street, w. ...	1000
*Dillon, John (Morrison, Dillon, and Co.), Fore		*Emmens, William, 5 Lothbury, City, E.C. ...	100
Street, E.C.	1000	England, George, Crystal Palace, Sydenham, s.E.	1000
*Dixon, George, Broad Street, Birmingham ...	100	*Ernest, Henry (Coleman, Ernest, and Row), 2	
*Dixon, Thomas, 7 St. James's Place, Hampstead		Old Swan Lane, E.C.	250
Road, N.W.	100	Evans, Edward, Boveney Court, Wiltshire ...	100
Dixon, Wm. Hepworth, Essex Villa, Queen's Road,		*Evans, E. Bickerton (Hill and Evans), Green Hall,	
St. John's Wood, N.W.	100	Worcester	100
Dobree, Bonamy, 1 Broad Sanctuary, Westminster,		Evans, Frederick Mallett (Bradbury and Evans),	
s.w.	500	Whitefriars, E.C.	1000
*Dobson, Benjamin, Mere Hall, Bolton, Lancashire	100	Evans, Jeremiah J. Evans, Sons, and Co., 55	
*Docker, Frederick William, 24 Denbigh Street,		King William Street, E.C.	500
Pimlico, s.w.	100	*Evans, S. Lavington, 12 High Street, Oxford ...	100
Dolby, John Edward Adolphus, Western House,		*Evill, Wm., jun., Lyncombe House, Patterson, s.w.	500
Earl's Court, Old Brompton, s.w.	100	*Ewart, Wm., M.P., 6 Cambridge Square, w. ...	500
*Donald, William, 69 Regent Street, w. ...	100		
Donkin, Bryan (Bryan Donkin and Co.), Bermond-		*Fairbairn, Andrew, Woodsley House, Leeds ...	500
sey, s.E.	500	*Fairbairn, Thomas, 17 Park Lane, w. ...	1500
Douglas, Francis Brown, Lord Provost of Edin-		*Fairbairn, Wm., F.R.S., Manchester ...	1000
burgh	100	Fairbairn, Wm. Andrew, Manchester ...	500
*Doulton, Henry (Doulton and Co.), Lambeth, s	200	Falmouth, Lord, 2 St. James's Square, s.w. ...	500
Doveston, George (Doveston, Bird, and Hull),		Farlow, Charles, 191 Strand, W.C.	100
Manchester	300	Farquhar, Thomas Newman, Crystal Palace, Sy-	
*Driver, Henry, Mayor of Windsor	400	denham, s.E.	1000
*Drax, J. S. W. Sawbridge Erle, M.P., Chaboro'		Farrow, Charles (Farrow and Jackson), 18 Great	
Park, Blandford	100	Tower Street, E.C.	100
*Ducie, Earl, 30 Prince's Gate, s.w.	500	*Faulkner, David, 3 Brydges Street, Strand, W.C.	100
Dudley, John Crews, Broad Street, Oxford ...	100	*Fauntleroy, Robert Thomas (Robert Fauntleroy	
Dugdale, James, Manchester	1000	and Co.), 100 Bunhill Row, E.C.	1000
Dunlop, John Macmillan, Manchester	100	*Fawell, Thomas, Stourbridge	100

Fearon, John Peter, Cuckfield, Sussex ...	£100	Garfit, Thomas, Boston ...	£100
Fenton, Francis Henry, 63 St. James's Street, s.w. ...	100	Garraway, Frederick, 94 Inverness Terrace, Kensington, w. ...	100
Ferguson, John F., Belfast ...	200	*Garrett, Richard, Leiston Works, Suffolk ...	500
Ferrabee, James, Stroud, Gloucestershire ...	100	Gask, Charles (Grant and Gask), 59 Oxford Street, w. ...	500
*Feversham, Lord, 1 Great Cumberland Street, w. ...	100	*Gaskell, John, St. Nicholas-at-Wade, Margate ...	100
*Field, John, Dornden, Tunbridge Wells ...	1000	*Gassiot, J. P., F.R.S., 77 Mark Lane, E.C. ...	1000
*Field, William, 224 Oxford Street, w. ...	200	*Gibbs, Henry Hueks, St. Dunstan's, Regent's Park, N.W. ...	500
*Filmer, Thomas H., 28 Berners Street, w. ...	100	*Gibson, The Right Hon. Thos. Milner, M.P., 3 Hyde Park Place, Cumberland Gate, s.w. ...	1000
*Finnis, T. Q., Alderman, 79 Great Tower Street, E.C. ...	1000	*Gifford, Wm. James, Ford, Wellington, Somerset ...	200
Findlay, C. B., Glasgow ...	100	*Gilbee, Wm. Armand (L. M. Fontainemoreau and Co.), 4 South Street, E.C. ...	100
*Firmin, George J., 80 Borough Road, S.E. ...	100	Gilbey, Walter (W. and A. Gilbey), 357 Oxford Street, w. ...	1000
*Fisher, Anthony Lax, M.D., 14 York Place, Portman Square, w. ...	100	*Girdwood, John, 49 Pall Mall, s.w. ...	100
Fisher, Richard, Midhurst ...	500	Girdwood, William, Old Park, Belfast ...	100
*Fisher, Robert, 13 Highbury Park, N. ...	250	*Glaisher, James, F.R.S., 13 Dartmouth Terrace, Lewisham, S.E. ...	100
Fisher, Rev. Samuel, Hope Parsonage, Hanley ...	200	*Glass, Thomas, 24 Somerset Street, Kingsdown, Bristol ...	100
*Fisher, Samuel, 33 Southampton Street, Strand, W.C. ...	100	*Glover, Thomas, 8 Upper Chadwell Street, Pentonville, E.C. ...	1000
*Fladgate, W. M., 40 Craven Street, Strand, W.C. ...	500	Glyn, George Carr, M.P., 67 Lombard Street, E.C. ...	500
*Fletcher, John Bowman, 17 New Burlington Street, w. ...	100	Glyn, Sir R. P., Bart., Lombard Street, E.C. ...	500
Forrest, James Alexander, Liverpool ...	100	*Glynn, Joseph, F.R.S., 28 Westbourne Park Villas, Bayswater, w. ...	100
Forster, John, 46 Montagu Square, w. ...	250	*Godwin, George, F.R.S., 24 Alexander Square, Brompton, S.W. ...	200
*Forster, Sampson Lloyd, The Five Ways, Walsall ...	100	*Goff, Joseph, jun., 25 Grosvenor Place, S.W. ...	100
Foster, Thomas (Elsmore and Foster), Burslem ...	250	Goody, Edward (Barlow, Goody, and Jones), Manchester ...	250
*Forteseue, The Hon. Dudley F., M.P., 17 Grosvenor Square, w. ...	100	*Goode, Thomas (Goode and Co.), 19 South Audley Street, w. ...	250
Fortnum, Charles Drury Edward, Stammore Hill, Middlesex ...	500	*Gooden, James Chisholm, 33 Tavistock Square, W.C. ...	200
*Foster, Charles Finch, Garden House, Cambridge ...	100	Goodman, John Dent, Minories, Birmingham ...	100
*Foster, John Porter (Foster, Porter, and Co.), 47 Wood Street, E.C. ...	1000	*Goore, Wm. Henry P., Camden Villas, Moscow Road, Palace Gardens, w. ...	100
Foster, Wm. Orme, M.P., Stourton Castle, Stourbridge ...	1000	Gordon, Lewis Dunbar Brodie, 24 Abingdon Street, S.W. ...	1000
*Fothergill, Benjamin, 65 Cannon Street, E.C. ...	100	*Gotto, Henry (Parkins and Gotto), Oxford St., w. ...	1000
*Fowke, Capt. Francis, R.E., Park House, South Kensington, S.W. ...	300	*Gower, The Hon. E. F. Leveson, M.P., 16 Bruton Street, w. ...	200
*Fowler, John, 2 Queen's Square Place, S.W. ...	1000	*Graham, Foster (Jackson and Graham), 37 Oxford Street, w. ...	250
Fowler, Charles, Totridge House, High Wycombe, Bucks ...	100	*Graham, Peter (Jackson and Graham), 37 Oxford Street, w. ...	1000
Fowler, Wm. Cave, 16 Aldersgate Street, E.C. ...	100	*Graham, William, 31 Threadneedle Street, E.C., and 17 Cleveland Square, Hyde Park, w. ...	1000
Fownes, Edward (Fownes, Brothers, and Co.), 41 Cheapside, E.C. ...	100	*Graham, William, Manchester ...	100
*Fox, Edwin (Halliday, Fox, and Co.), 4 Cullum Street, E.C. ...	200	*Grant, Alexander, 2 Clement's Court, Wood St., E.C. ...	250
Foxwell, Thomas S., Shepton Mallett ...	100	*Granville, The Earl, K.G., 16 Bruton Street, w. ...	1500
Francis, Charles Larkin (Francis, Brothers, and Pott), Nine Elms, s. ...	500	*Gray, Capt. Wm., M.P., 10 St. James's Place, S.W. ...	1000
Franklin, Abraham Gabay, 14 South Street, Finsbury, E.C. ...	100	*Greaves, Richard, The Cliff, Warwick ...	100
Franklin, Jacob Abraham, 14 South Street, Finsbury, E.C. ...	100	*Green, Daniel, jun., 11 Finsbury Circus, E.C. ...	100
*Franklyn, George Woodroffe, M.P., Lovell Hill, Windsor, and Carlton Club, S.W. ...	500	Green, James, 35 Upper Thames Street, E.C. ...	100
*Frith, J. G., 13 Wimpole Street, Cavendish Square, w. ...	1000	Greenall, Gilbert, Walton Hall, Warrington ...	500
Froggort, William, Manchester ...	100	Gregory, Charles, 212 Regent Street, w. ...	500
*Fussell, Rev. J. G. C., Privy Council Office, S.W., and 16 Cadogan Place, S.W. ...	200	*Gregson, Samuel, M.P., 37 Upper Harley St., w. ...	100
*Galpin, Thos. Dixon (Petter and Galpin), La Belle Sauvage Yard, E.C. ...	250	*Grew, Nathaniel, 8 New Broad Street, E.C. ...	100
Gardener, Robert, Manchester ...	100	*Griffiths, Robert, 69 Mornington Road, N.W. ...	250
Gardner, Samuel (John Kenyon and Co.), Sheffield ...	200		

Grissell, Henry, Regent's Canal Iron Works, N....	£500	*Heywood, J. Sharp (Wilkinson, Heywood, and Clark), Battle Bridge, N. ...	£500
Grove, George, Crystal Palace, Sydenham, S.E....	100	Hibbert, George, 21 Queen Street, Mayfair, W. ...	500
*Gruneisen, Chas. Lewis, 16 Surrey Street, Strand, W.C. ...	100	Hibbert, John Tomlinson, Manchester ...	100
*Guedella, Henry, Gresham Club, E.C. ...	500	*Hill, Charles, 29 Threadneedle Street, E.C. ...	300
Gundry, Wm. (Gundry and Sons) 1 Soho Sq., W. ...	100	*Hill, Thomas Rowley (Hill and Evans), Catherine Hill House, Worcester ...	100
Gunter, Richard, Lowndes St., Lowndes Sq., S.W. ...	300	*Hilton, Thomas, Great Suffolk St., Southwark, S. ...	100
*Gurney, Samuel, M.P., 65 Lombard Street, E.C. ...	1000	*Hindley, Charles Hugh (Charles Hindley and Sons), 134 Oxford Street, W. ...	1000
*Gwynne, J. E. Anderson (Gwynne and Co.), Essex Street Wharf, Strand, W.C. ...	500	*Hinstin, Ernest (Hinstin, Bros.), 22 Milk Street, Cheapside, E.C. ...	150
Hacking, Richard, Bury, Lancashire ...	1000	*Hinxman, J. H., M.D., Lee Terrace, Blackheath S.E. ...	500
*Haden, F. Seymour, 62 Sloane Street, S.W. ...	100	Hirst, Joseph, Huddersfield ...	500
*Hadfield, William, Manchester ...	100	Hirst, Wm. Edwards, Huddersfield ...	250
*Hale, Warren Stormes, Alderman, 71 Queen Street, E.C. ...	1000	Hitecock, Geo. Chas., 45 Lime Street, E.C. ...	250
*Hall, S. C., Boltons, West Brompton, S.W. ...	200	Hoare, Capt. Dean John, 45 Great Marlborough Street, W. ...	100
*Hall, Walter, 10 Pier Road, Erith ...	200	*Hobbs, Ashley, and Co. 76 Cheapside, E.C. ...	1000
*Hammond, William Parker, 74 Camden Road Villas, N.W. ...	100	Hodge, Wm. (Leighton and Hodge), 13 Shoe Lane, E.C. ...	500
*Hancock, Charles Frederiek, 39 Brnton Street, Bond Street, W. ...	1000	Hodges, John Francis, Mayor of Dorchester ...	100
*Hanhart, N. (M. and N. Hanhart), 64 Charlotte Street, Rathbone Place, W. ...	100	Hodgkinson, Grosvenor, Windthorpe Hall, Newark ...	100
*Hankey, Thomson, M.P., 45 Portland Place, W. ...	500	Hodgson, Kirkman Daniel, M.P., 36 Brook St., W. ...	500
*Hannington, C. S., North Street, Brighton ...	100	Hodgson, William Nicholson, Newby Grange, Carlisle ...	250
Hargreaves, W., 34 Craven Hill Gardens, W. ...	200	Holdsworth, Wm. Bailey (Wm. B. Holdsworth and Co.), Hunslet, Leeds ...	100
*Harris, James, Hanwell, W. ...	200	Holland, Sir Henry, Bart., 25 Brook Street, W. ...	200
*Harrison, Robert (Harrison, Lloyd, and Co.), 19 Friday Street, E.C. ...	500	Holland, James (Holland and Sons), 23 Mount Street, Grosvenor Square, W. ...	1000
*Harrison, Thos. E., 27 Great George Street, S.W. ...	100	*Hollins, M. Dainty, Potteries, Stoke-upon-Trent ...	2000
*Harrison, W., F.G.S., Blackburn ...	500	Holland, Robert, Stanmore, Middlesex ...	500
Hart, Ernest, 69 Wimpole Street, W. ...	100	*Holmes, Herbert M., Derby ...	200
*Hart, Charles (Hart and Son), Coekspur St., W.C. ...	100	*Holmes, James, 4 New Ormond Street, W.C. ...	300
Harter, James Collier, Manchester ...	1000	Hoole, Henry E. (Mayor of Sheffield), Green Lane Works, Sheffield ...	500
*Hartley, James (J. Hartley and Co.), Sunderland ...	1000	*Hooper, George N. (Hooper and Co.), Haymarket, S.W. ...	250
Hatch, Henry, Park Town, Oxford ...	100	*Hope, Henry Thomas, 116 Piccadilly, W. ...	2000
Haward, W. G., Haverstock Hill, N.W. ...	100	Hopkinson, James (J. and J. Hopkinson), 225 Regent Street, W. ...	200
*Hawkins, George, 88 Bishopsgate Street Without, E.C. ...	200	*Hopkinson, Jonathan, 40 Grosvenor Place, S.W. ...	500
*Hawkshaw, John, F.R.S., 43 Eaton Place, S.W. ...	1000	*Horn, James, 14 High Street, Whitechapel, E. ...	100
Haworth, J., Blackburn ...	100	Hornblower, Jethro (Hornblower, Fenwick, and Co.), 50 Mark Lane, E.C. ...	500
Hayes, Henry Wm. (Hayes and Co.), 4 Great Marlborough Street, W. ...	1000	Horsfall, Jas. (Webster and Horsfall), Birmingham ...	500
*Headley, Richard, Stapleford, Cambridge ...	100	Horsley, J. Calcott, A.R.A., 1 High Row, Kensington, W. ...	100
Heald, Nicholas, Manchester ...	100	*Horton, Isaac, 16 Clapham Rise, S. ...	500
*Healey, Elkanah, Oakfield, Gateacre, near Liverpool ...	100	*Hoskyn, Chandos Wren, Harewood, Ross, Herefordshire ...	500
*Heath, T. Vernon, 43 Piccadilly, W. ...	100	*Houghton, F. Burnett, 6 Clarendon Terrace, Kensington, W. ...	100
*Heather, James, The Crescent, Camden Road Villas, N.W. ...	100	*Houghton, George, 4 St. John's Park Villas, Haverstock Hill, N.W. ...	100
*Hemming, Frederick H., 104 Gloucester Place, Portman Square, W. ...	100	Hovendon, Robert, Crown Street, Finsbury, E.C. ...	100
*Henderson, Geo. Wm. Mercer, 103 Eaton Place, S.W. ...	500	*Hubert, Samuel Morton (John Woollams and Co.), 69 Marylebone Lane, W. ...	500
*Henderson, John (Banks, Bros., Henderson and Co.), Wigton ...	200	Hughes, James, 9 Crescent, Oxford ...	100
Henty, Robert, 40 Brunswick Square, Brighton ...	500	*Humby, George, 2 Aberdeen Place, S.W. ...	100
Hepworth, Wm., 108 Market Street, Manchester ...	100	Hunt, Henry A., 54 Eccleston Square, S.W. ...	500
Heron, Joseph, Manchester ...	250	Hunt, T. N., 2 Upper Portland Place, W. ...	500
Heugh, John, Manchester ...	500	*Hunt and Roskell, 156 New Bond Street, W. ...	2000
*Hewitt, Henry John, 19 Alexander Square, Brompton, S.W. ...	200	Hunter, Michael, jun., Master Cutler of Sheffield ...	100
Hewitt, Thomas, Summer Hill House, Cork ...	100		
*Heymann, Lewis (Heymann and Alexander), Nottingham ...	1000		

*Hutchinson, John (Hutchinson and Earle), Appleton House, Widnes, Lancashire ...	£1000	*Kimpton, Thomas, 5 Bath Street, Newgate Street, E.C. ...	£250
*Hutt, The Right Hon. William, Gibside, near Gateshead ...	1000	*Kinder, Arthur, 18 Great George Street, Westminster, S.W. ...	100
*Hutton, Thomas, J. P., Elm Park, Dublin ...	100	*Kisch, Simon Abraham, 8 Lancaster Place, W.C. ...	100
Hyam, David (Davis, Albert, and Co.), 60 Houndsditch, E.C. ...	1000	*Kitson, James, Mayor of Leeds ...	500
Hynam, John, 7 Wilson Street, E.C. ...	200	*Knight, George, 2 Foster Lane, E.C. ...	100
*Ibbotson, Thos. Hamer (Ibbotson and Langford), Manchester ...	250	*Knill, Stuart, The Crossletts in the Grove, Blackheath, S.E. ...	250
Ionides, Alex. Constantine, Tulse Hill, Surrey, S. ...	100	Knowles, John, Manchester ...	100
*Isaacs, Saul (S. Isaacs, Campbell, and Co.), 71 Jermyn Street, W. ...	1000	*Ladd, William, 11 Beak Street, Regent Street, W. ...	100
*Jackson, John, jun. (Geo. Jackson and Sons), 49 Rathbone Place, W.C. ...	200	*Lambert, Charles (Lambert and Butler), 141 Drury Lane, W.C. ...	500
*Jackson, John, jun., 49 Rathbone Place, W.C. ...	100	*Lambert, Thomas (Thos. Lambert and Son), Short Street, Lambeth, S. ...	500
*Jackson, R. M., 45 Piccadilly, W. ...	250	*Landon, James, 91 Inverness Terrace, Bayswater, W. ...	100
*Jackson, Samuel, 66 Red Lion Street, E.C. ...	200	Lang, Robert, Redland, Bristol ...	100
Jacques, Richard Machel, Easby Abbey, Richmond, Yorkshire ...	100	*Langton, Wm. H. Gore, M.P., 2 Prince's Gate, Hyde Park, W. ...	500
James, D. D. (Wm. Cory and Son), Commercial Road, Lambeth, S. ...	500	*Lankester, Edwin, M.D., 8 Saville Row, W. ...	100
*James, Jabus Stanley (Powis, James, and Co.), 26 Watling Street, E.C. ...	100	*Langworthy, Edward Reilly, Victoria Park, Manchester ...	250
*Jarrett, Griffith, 37 Poultry, E.C. ...	500	*Lansdowne, Marquis of, K.G., Lansdowne House, W. ...	1000
Jay, George (G. Jay and Son), King Street, Norwich ...	100	*Lavanchy, John R., 6 New Burlington Street, W. ...	100
*Jeanes, John (Johnstone and Jeanes), 67 New Bond Street, W. ...	500	*Lawrence, Frederick, 94 Westbourne Terrace, W. ...	200
*Jeffery, Wm. S. (Howell, James, and Co.), 5 Regent Street, S.W. ...	1000	*Lawson, A. M. (Peter Lawson and Son), Edinburgh ...	1000
Jenkins, Leonard (Jenkins, Hill, and Jenkins), Birmingham ...	500	*Lea, John W. (Lea and Perrins), Upper Wick, Worcester ...	100
*Joel, Joseph, Brompton Hall, Brompton, S.W. ...	1500	*Leaf, Sons, and Co., 39 Old Change, E.C. ...	1000
Johnson, Edmund, 10 Castle Street, Holborn, W.C. ...	100	*Leather, J. Towler, Leeds ...	500
*Johnson, Frederick, 12 North Street, Westminster, S.W. ...	500	*Le Breton, Francis, 21 Sussex Place, Regent's Park, N.W. ...	200
*Johnson, Henry, 39 Crutched Friars, E.C. ...	1000	*Le Couteur, Col. J., F.R.S., Bellevue, Jersey ...	100
Johnson, Henry, Mayor of Stamford ...	100	*Ledger, Robert Goulding, St. John's, Southwark, S.E. ...	100
*Johnson, J. M., 3 Castle Street, Holborn, W.C. ...	100	*Leeks, Edward Frederick, 73 Warwick Square, S.W. ...	100
*Johnson, Richard, Oak Bank, Fallowfield, Manchester ...	100	*Leeman, George, Lord Mayor of York, York ...	200
Johnston, James, Newmill, Elgin, N.B. ...	100	*Leigh, Evan, Miles Platting, Manchester ...	200
*Jones, David Morgan (John Morgan and Co.), Amen Corner, E.C. ...	100	*Leighton, George Cargill, Milford House, Strand, W.C. ...	250
*Jones, Edward, The Larches, Handsworth, Birmingham ...	100	*Leighton, John, 12 Ormond Terrace, Regent's Park, N.W. ...	250
*Jones, Frederick John, 10 Aldermanbury, E.C. ...	100	Leppoc, Henry Julius, Manchester ...	100
*Jones, John, Clock House, Wandsworth, S.W. ...	500	*Lethbridge, J. C., 25 Abingdon Street, Westminster, S.W. ...	500
*Jones, Owen, 9 Argyle Place, W. ...	100	*Letts, Thomas, 8 Royal Exchange, E.C. ...	100
*Jones, Rev. Wm. Taylor, Sydenham College, S.E. ...	100	*Letts, Thos., jun., Sydenham, S.E. ...	100
*Joubert, Ferdinand, 36 Porchester Terrace, W. ...	200	*Leuchars, William, 18 Piccadilly, W. ...	500
*Keeling, Henry Ling, Monument Yard, E.C. ...	250	*Levinsohn, Louis, 7 Finsbury Square, E.C. ...	100
Keighley, William, Huddersfield ...	250	Levy, John, 9 Orchard Place, Southampton ...	250
*Keith, Daniel, 124 Wood Street, Cheapside, E.C. ...	500	Levy, Levin (Lee, Brothers), 27 Wood Street, E.C. ...	100
*Kelk, John, 13 South St., Grosvenor Square, W. ...	3000	*Lewis, Arthur (Lewis and Allenby), 195 Regent Street, W. ...	1000
*Kelly, Sir Fitzroy, M.P., 32 Dover Street, W. ...	1000	*Lewis, Harvey, M.P., 24 Grosvenor Street, W. ...	2000
Kelsall, Henry (Kelsall and Kemp), Rochdale ...	200	*Lewis, Jas., 6 Bartlett's Buildings, Holborn, E.C. ...	100
*Kent, George, 199 High Holborn, W.C. ...	200	*Lewis, Waller, M.D., General Post Office, E.C. ...	100
*Kimber, Thos., Holland House, Blackheath, S.E. ...	200	Lewis, Wm., Alderman, The Mount, Rainbow Hill, Worcester ...	100
		*Lézard, Joseph (Baumé and Lézard), 21 Hatton Garden, E.C. ...	200

Liebert, Bernhard, Manchester	£500	Mappin, John Newton (Mappin and Co.), 77 Oxford Street, w.	£500
Lindley, Dr. John, F.R.S., Acton Green, Turnham Green, w.	100	Marjoribanks, Dudley Countts, M.P., 29 Upper Brook Street, w.	1000
Line, William, Daventry	100	*Marjoribanks, E., 34 Wimpele Street, w.	2000
Lings, Thomas, Manchester	100	Marrian, James Pratt, Birmingham	100
*Little, Thomas, 43 Oxford Street, w.	200	*Marsh, Matthew Henry, M.P., 43 Rutland Gate, S.W.	500
Lloyd, Edward Rigge, Albion Tube Works, Birmingham	100	Marshall, Thos. R. (W. Marshall and Co.), Edinburgh	100
Lloyd, George, 70 Great Guildford Street, S.E. ...	100	Marshall, William, Penworthan Hall, near Preston	200
*Lloyd, Sampson (Lloyd and Lloyd), Wednesbury	200	Marshall, W. S., 20 Strand, W.C.	1000
Lloyd, Samuel, jun., Old Park Iron Works, Wednesbury	100	Martin, George Wm., 68 Gloucester Crescent, N.W.	100
*Loader, R. A. C., 23 and 24 Finsbury Pavement, E.C.	500	*Martin, George Wm., 14 and 15 Exeter Hall, W.C.	100
*Lock, Samuel Robert (Lock and *Whitfield), 178 Regent Street, w.	500	Martin, Richard (Martin, Hall, and Co.), Sheffield	200
*Lockwood, Ben., Huddersfield	250	Martin, W. H., Burlington Arcade, w.	100
Lorimer, George (Master of the Merchant Co.), Edinburgh	200	Martineau, Joseph, Basing Park, Alton	1000
Losada, J. R., 105 Regent Street, w.	200	*Martyn, Silas Edward, 46 Thurloe Square, S.W. ...	200
*Lovegrove, Samuel, Blackheath, S.E.	100	*Maw, George, Benthall Park, Broseley	250
*Lowe, George, F.R.S., Finsbury Circus, E.C. ...	200	Maxwell, Wm. James, Richmond, S.W.	100
Lowe, J. Stanley, 31 Corn Market Street, Oxford	100	May, Walter (Walter May and Co.), Birmingham	100
*Loysel, Edward, C.E., 92 Cannon Street, E.C. ...	1000	*Maynard, Joseph, 57 Coleman Street, E.C.	1000
*Lucas, Charles (Lucas Bros.), Belvidere Road, S.	1500	McClure, Wm., Manchester	100
*Lucas, James H., 13 Upper Woburn Place, N.W.	1000	McConnel, James, Best Hill, Prestwich, Manchester	100
Lucas, Philip, Manchester	300	McConnel, W., Best Hill, Prestwich, Manchester	100
*Lucas, Thomas (Lucas Bros.), Belvidere Road, S.	1500	McConnel, Henry, Cressbrook, Bakewell	1000
Ludlam, Jeffery, 174 Piccadilly, w.	300	McCormick, William, M.P., 16 Cambridge Terrace, Regent's Park, w.	2000
Lumley, Wm. Golden, 10 Sussex Place, Regent's Park, N.W.	100	McCracken, James John (J. and R. McCracken and Co.), 7 Old Jewry, E.C.	200
*Lutwidge, R. W. S., 19 Whitehall Place, S.W. ...	500	*McFarlane, Walter, Saracen Foundry, Glasgow ...	100
*Lyeett, Francis, 2 Highbury Grove, N.	100	McGarel, Charles, 2 Belgrave Square, S.W.	1000
*Lyell, Sir Charles, 53 Harley Street, w.	300	*McLean, John Robinson, 2 Park Street, Westminster, S.W.	2000
*Lyle, James Grieve, 20 Little Moortfields, E.C. ...	200	McQueen, Wm. Benjamin (McQueen Bros.), 184 Tottenham Court Road, w.	500
*Lyon, Arthur, 32 Windmill Street, Finsbury, E.C.	100	*Mechi, J. J., Alderman, 4 Leadenhall Street, E.C.	1000
*Lyons, Morris, Birmingham	100	*Meekins, Thomas Mossom, I.L.D., 44 Chancery Lane, W.C.	100
*Lyte, F. Maxwell, Florian, Torquay	100	Mellor, Wright, Huddersfield	250
*Macadam, Chas. Thos., 109 Fenchurch Street, E.C.	100	*Messenger, Sam. (Messenger and Co.), Birmingham	500
*Maeathur, Major-Gen. Edwd., 134 Piccadilly, w.	1000	*Metchim, Wm. Paul, 20 Parliament Street, S.W.	100
*Maekenzie, Rev. Charles, Westbourne College, w.	100	*Metzler, George (Metzler and Co.), 137 Great Marlborough Street, w.	500
*Maekintosh, R. J., M.A., 2 Hyde Park Terrace, Kensington Gore, w.	100	Meyers, Barnett, 2 Mill Lane, Tooley Street, S.E.	100
*Maclea, Chas. G., 17 Blenheim Terrace, Leeds ...	200	Michell, Richard, 93 Oxford Street, w.	500
Maeleann, Miss M., 3 Edwardes Place, Kensington, w.	100	Micholls, Henry, Manchester	100
Maelean, Lt.-Col. H. D., Lazenby Hall, Penrith	250	*Middleton, Sir George N. Broke, Bart., Shrubland Park, Ipswich	500
*Maekintosh, R. F., 2 Hyde Park Terrace, W. ...	100	*Miles, Alfred Webb, 73 Brook Street, Hanover Square, w.	300
Mac Leod of Mac Leod, 9 Cambridge Square, w.	500	Miles, Henry, The Dounfield, Kington, Herefordshire	500
*Maleolm, Major-General George Alexander, 67 Sloane Street, S.W.	200	*Miles, Pliny, 169 King's Road, Chelsea, S.W. ...	200
*Malcolm, John W., M.D., 7 Great Stanhope Street, w.	500	*Millar, John, M.D., Bethnal House, Bethnal Green, S.E.	100
*Maekrell, W. T., Abingdon Street, S.W.	500	Mills, Charles, 67 Lombard Street, E.C.	500
Mallinson, Thomas, Huddersfield	500	Mills, Edward W., 67 Lombard Street, E.C. ...	500
*Manby, Charles, F.R.S., 50 Harley Street, Cavendish Square, w.	100	*Mitchell, Rev. M., 15 St. James's Square, S.W. ...	100
Mansfield, George (Wright and Mansfield), 3 Gt. Portland Street, w.	300	*Moate, Charles, R., 65 Old Broad Street, E.C. ...	1000
Mappin, Frederick Thorpe (Thos. Turton and Sons), Sheaf Works, Sheffield	250	*Montgomerie, H. E., 17 Gracechurch Street, E.C.	100
Mappin, Joseph Charles (Mappin Bros.), Baker's Hall, Sheffield	200	Moon, Richard, Bevere, Worcester	250

Moreland, John Brogden, 76 Old Street, E.C. ...	£100	*Odams, James, 109 Fenchurch Street, E.C. ...	£200
*Moreland, Joseph, 76 Old Street, St. Luke's, E.C. ...	100	Olivier, Charles Henry (Olivier and Carr), 37	
Moreland, Richard, Eagle House, Holloway, N. ...	100	Finsbury Square, E.C. ...	200
*Moreton, John, Wolverhampton ...	100	Oppenheim, John Moritz, 85 Cannon Street, West,	
Morgan, John, Amen Corner, E.C. ...	100	E.C. ...	1000
*Morgan, William Vaughan (Patent Plumbago Cru-		Ordish, R. M. (Ordish and Co.), 18 Great George	
cible Company), Battersea, s.w. ...	500	Street, s.w. ...	100
*Morley, Samuel, 18 Wood Street, E.C. ...	1000	Osborne, Charles, Whitehall Street, Birmingham	100
*Morrish, Francis Edward, Lancaster Buildings,		Osler, Clarkson (F. and C. Osler, Birmingham ...	500
Liverpool ...	100	Other, Christopher (Other and Robinson), Wensley-	
Mosley, Thomas (Thomas Mosley, Huish, and Co.),		dale, Bedale, Yorkshire ...	500
Manchester ...	100	*Owen, Lt.-Col. H. Cunliffe, R.E., Devonport ...	200
*Mouat, Frederick, M.D., Athenæum Club (Messrs.		Owen, Rev. Joseph Butterworth, 40 Cadogan Place,	
R. C. Lepage and Co.), 1 Whitefriars Street,		Chelsea, s.w. ...	100
Fleet Street, E.C. ...	100		
*Muir, William, Britannia Works, Manchester ...	100	*Pakington, the Right Hon. Sir John S., Bart.,	
*Munn, Major W. Augustus, Faversham, Kent ...	100	M.P., 41 Eaton Square, s.w. ...	200
*Murchison, John Henry, Surbiton Hill, Kingston-		*Palk, Sir Laurence, Bart., M.P., 47 Rutland Gate,	
on-Thames ...	100	s.w. ...	200
*Murchison, Sir Roderick Impey, F.R.S., 16 Belgrave		*Palmer, George (Huntley and Palmers), Reading,	
Square, s.w. ...	500	Berks ...	200
Murray, Eugene, Glebe House, St. Mary Street,		*Palmer, Philip, 118 St. Martin's Lane, w.c. ...	100
Woolwich, s.e. ...	200	Panizzi, Antonio, British Museum, w.c. ...	200
*Murray, John, 7 Whitehall Place, s.w. ...	1000	Panmure, Lady, 19 Chesham Street, Belgrave	
*Myers, George, Lambeth, s. ...	1000	Square, s.w. ...	500
		Parker, Charles, Binfield, Berks ...	300
*Napier, Robt., West Shandon, Glasgow ...	2000	*Parker, James, Great Baddow House, Chelmsford	100
*Napier, Hon. Wm., 2 Old Palace Yard, s.w. ...	500	Parsons, Thomas, 92 Regent Street, w. ...	100
*Navroji, Dababhai, 32 Great St. Helen's, E.C. ...	100	*Part, John Cumberland, 186 Drury Lane, w.c. ...	100
*Needham, William (Needham and Kite), Phoenix		*Paterson, John, 104 Wood Street, E.C. ...	200
Iron Works, Vauxhall, s. ...	200	*Paxton, Sir Joseph, M.P., Roehills, Sydenham,	
*Neighbour, Geo. L. (Neighbour and Sons), 127		s.e. ...	1000
High Holborn, w.c. ...	500	*Payne, James, Plough Bridge Works, Rotherhithe,	
Neild, William (Thos. Hoyle and Sons), Man-		s.e. ...	250
chester ...	1000	*Pearee, John (Halling, Pearce, and Stone), 2 Cock-	
*Neilson, Walter M., Glasgow ...	300	spur Street, s.w. ...	1000
Newbold, Robert (Joseph Rodgers and Sons), Nor-		*Pease, Henry (Henry Pease and Co.), Darlington	250
folk Street, Sheffield ...	250	*Pease, Joseph (J. and J. W. Pease), Darlington...	1000
Newen, George, 1 Hyde Park Terrace, w. ...	1000	*Peake, Thomas, The Tileries, Tunstall ...	250
Newinarch, William, 7 Cornhill, E.C. ...	100	Pedler, George Stanbury, 199 Fleet Street, E.C. ...	100
Newton, Fredk. (Newton and Co.), 3 Fleet Street,		*Peel, Geo., Soho Iron Works, Manchester ...	200
E.C. ...	100	*Pender, John (Pender and Co.), Mount Street,	
*Nicholay, J. A., 82 Oxford Street, w. ...	1000	Manchester ...	500
*Nicholls, G. P. (J. and G. Nicholls), Aldine		*Penn, John, The Cedars, Lee, Kent, s.e. ...	1000
Chambers, Paternoster Row, E.C. ...	200	Pepper, John Henry, Morton House, Kilburn	
Nichols, Robert Cradock, 5 Westbourne Park		Priory, Edgeware Road, n.w. ...	100
Place, w. ...	100	Perry, Stephen (Jas. Perry and Co.), 37 Red Lion	
Nicholson, William Newzam, Newark-on-Trent ...	100	Square, w.c. ...	100
Nickols, Richard, Joppa, Leeds ...	100	Phillips, Robert Nathaniel, Manchester... ..	100
*Nicol, Donald (H. J. and D. Nicoll), 114 Regent		Phillips, Frederick D. (Phillips and Samson), 40	
Street, w. ...	1000	High Holborn, w.c. ...	100
*Nightingale, Charles (W. and C. Nightingale),		*Phillips, George (W. P. and G. Phillips), 359	
64 Wardour Street, w. ...	250	Oxford Street, w. ...	500
*Nind, Philip, 30 Leicester Square, w.c. ...	300	Phillips, Mark, Snitterfield, Stratford-on-Avon ...	100
*Noble, Matthew, 13 Bruton Street, w. ...	200	*Phillips, Robert, 23 Cockspur Street, s.w. ...	1000
*Nolan, Edward Henry, Ph.D., LL.D., 29 Abing-		*Phillips, Sir Thomas, 11 King's Bench Walk,	
don Villas, Kensington, w. ...	200	Temple, E.C. ...	300
North, David (Wright and North), Wolverhampton	100	*Phillips, William Phillips (W. P. and G. Phillips),	
*North, Frederick, M.P., The Lodge, Hastings ...	250	155 New Bond Street, w. ...	500
*Northcote, Stafford H. (S. Northcote and Co.), 29		*Phythian, Thomas, 430 West Strand, w.c. ...	100
St. Paul's Churchyard, E.C. ...	250	*Pickstone, Wm., Manchester ...	100
Novelli, Augustus Henry, 69 Grosvenor Street, w.	1500	Pike, Robert, St. Aldate Street, Oxford ...	100
		*Pillischer, M., 88 New Bond Street, w. ...	100
*Obbard, Robert, Paragon, Blackheath, s.e. ...	100	*Pinches, T. R., 27 Oxendon Street, Haymarket, s.w.	150
		*Pitts, Samuel, 14 Catherine Street, w.c. ...	100

Playfair, Lyon, Dr., C.B., Edinburgh ...	£200	*Rideout, Wm. Jackson, Farnworth, Manchester	£250
*Platt, John (Platt, Bros., and Co.), Oldham ...	500	*Rimmel, Eugène, 96 Straud, w.c. ...	100
Plowman, Joseph, St. Aldate Street, Oxford ...	100	*Robb, Alexander, 79 St. Martin's Lane, w.c. ...	500
*Pollard, George, 10 Walbrook, E.C. ...	100	*Roberts, Daniel, 16 Northampton Place, Old Kent Road, S.E. ...	100
*Poole, Henry, Saville Row, w. ...	1000	Roberts, Edward, F.S.A., 25 Parliament St., S.W. ...	100
Poole, Thomas, 25 Princes Street, Cavendish Square, w. ...	100	Robertson, David (Robertson, Brothers, and Co.), Glasgow ...	100
Pope, W. A., 53 Charles Street, Berkeley Square, w. ...	100	Robinson, F. (Robinson and Cottam), 7 Parliament Street, S.W. ...	300
*Portal, Wyndham S., Malshanger, Basingstoke ...	100	*Robinson, Henry Oliver, 16 Park Street, Westminster, S.W. ...	500
Potter, Alan, 28 Falkner Square, Liverpool ...	1500	Robinson, J. C., 33 Alfred Place, West Brompton, S.W. ...	100
*Potter, Edmund, F.R.S., Manchester ...	500	*Robinson, James (Rigby and Robinson), 7 Park Lane, Piccadilly, w. ...	500
Potter, J. G. (E. E. and J. G. Potter), Darwen, Lancashire ...	500	Robinson, John Henry, New Grove, Petworth, Sussex ...	100
*Potter, Wm. Simpson, 1 Adam Street, Adelphi, W.C. ...	500	Robinson, John (Sharp, Stewart, and Co.), Manchester ...	500
Poulter, James, Dover ...	100	*Robinson, Joseph, Berkhamstead ...	1000
Powell, William (John Hardman and Co.), Great Charles Street, Birmingham ...	500	Rock, James, jun., 6 Stratford Place, Hastings ...	100
Power, Bonamy Mansell, 19 Chesham Street, S.W. ...	1000	*Roe, George, Nutley, Dublin ...	250
*Prescott, W. G., 62 Threadneedle Street, E.C. ...	1000	Roebuck, Samuel, Salebank, Manchester ...	100
Price, David, 10 York Terrace, Regent's Park, N.W. ...	1000	Rogers, Francis, 2 Arundel Place, Barnsbury Park, N. ...	100
Price, Dr. David S., Crystal Palace, Sydenham, S.E. ...	100	*Rolls, Jesse Gouldsmith, C.E., 4 Church Court, Clement's Lane, E.C. ...	200
Price, George, Cleveland Safe Works, Wolverhampton ...	100	*Rolt, Peter, St. Michael's House, Cornhill, E.C. ...	1000
*Pritchard, John, M.P., 89 Eaton Square, S.W. ...	200	*Roney, Sir Cusack P., 15 Langham Place, w. ...	1000
Privett, Harry, 47 Brewer Street, Golden Square, S.W. ...	100	Rose, Hugh, Chairman of Chamber of Commerce, Edinburgh ...	200
*Purcell, Alfred, 80 Cornhill, E.C. ...	100	*Rose, J. Anderson, Salisbury Street, Straud, w.c. ...	100
Purvis, Prior, M.D., Blackheath, S.E. ...	100	*Rose, Wm. Anderson, Alderman, Queenhithe, E.C. ...	500
Quilter, William, 3 Moorgate Street, E.C. ...	100	*Rosse, The Earl of, Rosse Castle, Parsonstown ...	1000
Quin, Frederick F., M.D., 111 Mount Street, w. ...	200	Rothery, H. Cadogan, 94 Gloucester Terrace, Hyde Park, w. ...	100
Ramsay, Rear-Admiral W., 23 Ainslie Place, Edinburgh ...	100	Round, Joseph, 33 Beaumont Street, Oxford ...	100
*Ransford, Henry, Huron Lodge, Boltons, West Brompton, S.W. ...	100	*Routledge, Thomas, jun., Lynsham, Oxford ...	100
*Ratcliff, Charles, Wyddrington, Birmingham ...	500	Rowbotham, Samuel, Bradford Street, Birmingham ...	100
Ravenscroft, Francis, Birkbeck Lodge, Boundary Road, St. John's Wood, N.W. ...	100	*Rumbold, Wm. Henry, The Grange, Tundridge Wells ...	100
*Rawlinson, Robert, 17 Ovington Square, S.W. ...	100	*Rumney, Robert, Manchester ...	100
*Read, Reginald, M.D., 1 Guildford Place, W.C. ...	200	Runtz, John, Burlington House, Milton Road, Stoke Newington, N. ...	100
*Redgrave, Alexander, Eagle Lodge, Old Brompton, S.W. ...	100	*Ryland, Arthur, Mayor of Birmingham ...	100
Redgrave, Richard, 18 Hyde Park Gate South, w. ...	200	*Rylands, John (Rylands and Sons), Manchester ...	500
*Redgrave, Samuel, 17 Hyde Park Gate South, Kensington, w. ...	200	Sacred Harmonic Society (by Treasurer, R. K. Bowley), Exeter Hall ...	1000
*Reed, Charles, F.S.A., Paternoster Row, E.C. ...	100	*Sadler, Charles James, Broad Street, Oxford ...	100
Reed, Thomas Allen, 41 Chancery Lane, W.C. ...	100	*Salisbury, Marquis of, K.G., Hatfield ...	1000
*Reiss, James, 110 Cross Street, Manchester ...	500	*Salomons, Aaron, Old Change, E.C. ...	500
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Richardson, James (Richardson Brothers), Edinburgh ...	500	Sandbach, Wm. R., Willesbourne Hall, Warwick ...	100
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Rickards, Francis Philip, Manchester ...	100	Sangster, John (W. and J. Sangster), 75 Cheap-side, E.C. ...	100

*Sassoon, S. David, 17 Cumberland Terrace, Regent's Park, N.W. ...	£1000	*Somes, Joseph, M.P., National Club, s.w. ...	£1000
*Saul, George Thomas, Bow Lodge, Bow, E. ...	100	*Sopwith, Thomas, F.R.S., 43 Cleveland Square, s.w. ...	200
*Saunders, William Wilson, F.R.S., Lloyd's, E.C. ...	500	Sotheby, S. Leigh, Buckfastleigh House, South Devon ...	500
Savory, John, 143 New Bond Street, W. ...	500	Sowler, John, Manchester ...	100
Sawyer, Frederick, "The London," Fleet Street, E.C. ...	2500	Sowler, Thomas, Manchester ...	100
*Schlesinger, Julius, Walmer Villas, Bradford, Yorkshire ...	100	*Spark, Henry King, Greenbank, Darlington ...	500
*Schofield, Wm. F., Aldborough, Borough Bridge ...	1000	*Sparks, William, Crewkerne ...	200
*Schuster, Leo, 18 Cannon Street, E.C. ...	3000	*Sparrow, Charles, 11 New North Street, Red Lion Square, W.C. ...	100
Schwabe, Adolphe (Salis, Schwabe, and Co.), Manchester ...	500	Spence, James, Liverpool ...	250
*Scott, Sir Francis E., Bart., 97 Euston Square, s.w. ...	300	*Spicer, William R. (Spicer Bros.), 19 Bridge Street, E.C. ...	500
Scott, Walter, Manchester ...	100	*Spiers, Richard James, Alderman, Oxford ...	250
Scott, William (*Rogerson and Co.), Newcastle-upon-Tyne ...	1000	*Squire, William, 5 Coleman Street, E.C. ...	500
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*Sharples, Joseph, Hitchin ...	200	Standring, James, Mayor of Margate ...	100
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*Sheriff, Alex. Clunes, Shrubs Hill, Worcester ...	100	Starey, Thomas, Rawstorn, Nottingham ...	200
Shilson, William, Neithrop, Banbury ...	200	*Starr, Henry (Wheatley, Starr, and Co.), 156 Cheapside, E.C. ...	1000
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*Simon, George (Lightly and Simon), 123 Fenchurch Street, E.C. ...	500	Stern, Sigismund James, Manchester ...	500
*Simpson, W. B., 456 West Strand, W.C. ...	100	*Stevenson, John, Canal Foundry, Preston ...	100
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Slade, Felix, Walcot Place, Lambeth, S. ...	500	Stewart, Charles E., 30 Upper Harley Street, W. ...	250
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Smith, Mark (Wm. Smith and Bros.), Heywood, Manchester ...	300	Sutton, M. H. (Sutton and Sons), Reading, Berks ...	250
*Smith, R. M., Edinburgh ...	250	Sylvester, J. J., Professor, F.R.S., Royal Military Academy, Woolwich, S.E. ...	100
*Smith, Wm., C.E., 19 Salisbury Street, Adelphi, W.C. ...	150	*Symonds, John, 3 Ingram Court, Fenchurch Street, E.C. ...	100
Smith, Wm., 20 Upper Southwick Street, Cambridge Square, W. ...	100	*Taber, John, 39 Crutched Friars, E.C. ...	100
Smith, W. H., 186 Strand, W.C. ...	500	*Tagg, William, 49 Chichester Place, W.C. ...	100
*Snelgrove, John (Marshall and Snelgrove), 11 Vere Street, W. ...	1000	Tamplin, F. A., Liverpool ...	250
*Solly, S. R., F.R.S., 10 Manchester Square, W. ...	300	Tannett, T. (Smith, Beacock, and Tannett), Leeds ...	500
Solomon, Henry, 134 and 31 Houndsditch, E.C. ...	250	*Tapling, Thos. (T. Tapling and Co.), Gresham Street, E.C. ...	1000
*Solomon, Joseph, 22 Red Lion Square, W.C. ...	100	Taunton, Lord, 27 Belgrave Square, s.w. ...	1000
Solomon, Leon, 69 Grosvenor Street, W. ...	1000	Taylor, J. Fred., 11 Upper Phillimore Gardens, S. ...	200

*Taylor, Thomas George, Nelson Lodge, Stoke Newington Road, N. £200	Vernon, G. H., Grove, Retford £100
*Taylor, William, Newport Pagnell 200	Viecars, Richard, Padbury 250
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*Thring, Henry, 5 Queen's Gate Gardens, South Kensington, S.W. 100	*Ward, John, 5 and 6 Leicester Square, W.C. ... 500
*Thurston and Co., 14 Catherine Street, Strand, W.C. 500	*Watkins, William, 52 Lime Street, E.C. ... 100
Tighe, Right Hon. Col. W. F. Fownes, Woodstock Park, Inistioige, Ireland 200	Watson, James (James Nisbet and Co.), 21 Berners Street, W. 100
Tillett, Samuel, 6 Wellington Terrace, Bayswater, W. 100	*Webb, John, 11 Grafton Street, Bond Street, W. 1000
*Todé, Edward Henri, 8 Took's Court, Lincoln's Inn Fields, E.C. 300	Weeks, John, 54 Baker Street, W. 500
Tod-Heatly, Grant H., 5 Berkeley Square, W. ... 300	*Welch, John Kemp, 51 Berners Street, W. ... 500
*Tootal, Edward, The Weaste, Manchester ... 500	*Welch, John Kemp (J. Schweppe and Co.), 51 Berners Street, W. 500
*Topham, John, 32 King William Street, E.C. ... 150	Wenlock, Lord, Escrick Park, York 200
Tottie, Charles, 2 Alderman's Walk, E.C. ... 500	*Wertheimer, Samson, 154 New Bond Street, W. 300
*Towle, John, Hincksey Mills, Oxford ... 100	*Westhead, Joshua P. Brown, M.P. (J. P. and L. Westhead and Co.), Manchester 1000
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Underhay, Fredk. George, 23 Arundel Square, Barnsbury, N. 100	*Whittington, Rev. R. 18 Guildford Street, Russell Square, W.C. 100
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*Wilson, Geo. F., F.R.S., Belmont, Vauxhall, s. ... 500	*Woolcombe, Thomas, Kerr Street, Devonport ... 100
*Wilson, Professor John, University, Edinburgh ... 300	*Woolton, Charles, 246 High St., Borough, s.e. 500
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*Wodderspoon, James, 7 Serle Street, w.c. ... 1000	Wrigley, Thomas, 32 Princess Street, Manchester 500
Wodehouse, Lord, 48 Bryanstone Square, w. ... 100	Wyatt, M. Digby, 37 Tavistock Place, w.c. ... 100
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*Wood, Nicholas, Durham 100	
*Wood, Vice-Chancellor, Sir W. Page, 31 Great George Street, s.w. 100	
Woodcock, William, Manchester 100	
*Woodl, Basil T., M.P., Coughton Hall, Knares- borough 250	*Zanzi, Alexander, 30 Brompton Crescent, s.w. 100

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INTERNATIONAL EXHIBITION, 1851.

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TO
PEYTON & HARLOW.

(See *Official Illustrated Catalogue*, Part XII., Class 31.)

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THEIR RECENT IMPROVEMENTS,

Secured to them by FIVE PATENTS, under the protection of which the Bedsteads exhibited in the International Exhibition 1862 are manufactured, viz.:—

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- An improved mode of attaching the sides and ends of Bedsteads, whereby a more massive and more ornamental appearance can be given to the pillars (Patent dated 9th June 1860)—this object being further attained by the use of improved moulds or chills employed in casting the pillars. (Provisional protection granted 20th November 1861.)
- An improved method of making the dovetail joints of Bedsteads, whereby the lath bottoms can be attached and tightened in the simplest and firmest manner, by an inexperienced person, and without any spanner or other loose article, or any part liable to derangement, such as a turning stud. (Provisional protection granted 18th October 1861.)
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3rd. It will, on account of its peculiar construction, consume, whilst burning with a good flame, from one to two cubic feet of gas per minute (the light being thereby improved), thus tending oftentimes, though in a small degree, to prevent the accumulation of gas, and so to some extent to lessen the risk of explosion.

4th. Owing to the fact of the gas passing into the Lamp principally from below, the gauze that covers the flame does not readily become red-hot.

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6th. The lock is very simple, though entirely differing in principle from all others now in use, and is rendered perfectly secure by means of a seal placed over the lock, and completely concealing it in such a manner as to render it *absolutely impossible to open the Lamp without breaking the seal*, thus forming a perfect detector.

7th. The great increase, however, in the light would of itself remove the chief temptation to open the Lamp, added to which, it gives if anything *less* light when opened.

8th. It is also, under ordinary circumstances, impossible to light a pipe by drawing the flame through the gauze (as is the case with the 'Davy').

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With 2 stops, 1 set and a half of vibrators (polished case) . . . 12

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With 5 stops, 2 sets of vibrators (ditto) . . . 22

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With 10 stops, 3 sets of vibrators (ditto) . . . 30
(The best and most effective instrument made.)

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[May 1st, 1862.

ROYAL HORTICULTURAL SOCIETY.

REMAINING ARRANGEMENTS FOR THE EXHIBITIONS AND MEETINGS IN 1862,
TO BE HELD AT
THE GARDEN, SOUTH KENSINGTON, W.

May 2, Friday. Council, and Meeting for Election of Fellows.
" 6, Tuesday. Fruit and Floral Committee.
" 12, Monday. Meeting for Election of Fellows.
" 16, Friday. Council.
" 21, WEDNESDAY. FIRST GREAT SHOW, and Fruit and Floral Sub-Committee.
" 28, Wednesday. Election of Fellows, and Ballot for Plants.
" 30, Friday. Opening day of American Show.

* During June there will be a Grand Show of American Plants by Messrs Waterer and Godfrey, of Knaphill Nursery, Woking, Surrey.

June 6, Friday. Council, and Meeting for Election of Fellows.
" 11, WEDNESDAY. SECOND GREAT SHOW, and Fruit and Floral Sub-Committee.
" 20, Friday. Council, and Meeting for Election of Fellows.
" 26, THURSDAY. ROSE SHOW, and Fruit and Floral Sub-Committee.

July 2, WEDNESDAY. THIRD GREAT SHOW, and Fruit and Floral Sub-Committee.
" 4, Friday. Council, and Meeting for Election of Fellows.
" 18, Friday. Council.

" 22, Tuesday. Fruit and Floral Committee.
August 1, Friday. Council, and Meeting for Election of Fellows.
" 12, Tuesday. Fruit and Floral Committee.
" 26, Tuesday. Fruit and Floral Committee.

Sept. 5, Friday. Council, and Meeting for Election of Fellows.
" 10, WEDNESDAY. SHOW OF AUTUMN FLOWERS, and Fruit and Floral Sub-Committee.
" 23, Tuesday. Fruit and Floral Committee.

* At some period during the season it is expected that the Memorial of the Exhibition of 1851 will be finished, and probably publicly uncovered.

October 3, Friday. Council.
" 8, Wednesday. Fruit and Floral Sub-Committee.
" 8, 9, & 10. GREAT INTERNATIONAL SHOW OF FRUIT, GOURDS, ROOTS, VEGETABLES, AND CEREALS. The Show of Gourds, Roots, and Cereals to continue until the 18th.

Nov. 7, Friday. Council, and Meeting for Election of Fellows.
" 11, Tuesday. Fruit and Floral Committee.

Dec. 5, Friday. Council.
" 9, Tuesday. Fruit and Floral Committee.
" 19, Friday. Council.

Ladies and gentlemen wishing to become Fellows, must be proposed by some Fellow by whom they are known. Rules and Forms can be obtained of Mr. A. MURRAY, Assistant Secretary.

ADMISSION OF THE PUBLIC.

I.—GREAT MEETINGS.

May 21. FIRST GREAT MEETING	{	Admission by tickets, price 5s. each, purchased previously to the day of the Show. If payment is made at the door, 7s. 6d. will be charged for each admission.
June 11. SECOND DITTO		
July 2. THIRD DITTO		
UNCOVERING OF THE MEMORIAL OF 1851.		

II.—HORTICULTURAL EXHIBITIONS.

May 30. OPENING DAY OF THE AMERICAN SHOW, but contingent upon the season	2s. 6d.	{	Admission by payment at the door, or by tickets previously purchased.
June 26. ROSE SHOW	2s. 6d.		
Sept. 10. AUTUMN FLOWER SHOW	2s. 6d.		
Oct. 8. FRUIT & VEGETABLE SHOW	2s. 6d.		
" 9. DITTO	1s. 6d.		
" 10. DITTO	1s. 6d.		
" 11—18. GOURDS AND ROOTS	1s. 6d.		

III.—ORDINARY DAYS.

May 1	...	...	...	...	5s. 6d.
" 2	...	...	...	...	5s. 6d.
" 3	...	...	...	...	5s. 6d.

From 5th May to 31st May.

Sundays	...	No admission by payment.	Wednesdays (Band)	1s. 6d.
Mondays	...	(Band) ... 1s. 6d.	Thursdays (Band)	1s. 6d.
Tuesdays	...	(Band) ... 1s. 6d.	Fridays (Band)	2s. 6d.
			Saturdays (Bands)	6s. 6d.

From 2nd June to 18th October.

Sundays	...	No admission by payment.		
Mondays	...	(Band)	{ Gardens alone	1s. 6d.
Tuesdays	...	(Band)	{ Gardens and Exhibition	1s. 6d.
Wednesdays	...	(Band)	{ Gardens from Exhibition	0s. 6d.
Thursdays	...	(Band)		
Fridays	...	(Band)		2s. 6d.
Saturdays	...	(Bands)		5s. 6d.

ANDREW MURRAY, Assistant Secretary.

BOUND BY
BONE & SON.
76, FLEET STREET,
LONDON.